

# COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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## Scheme A Office Nets \$500,000

By Jake Kirchner

CW Washington Bureau

BALTIMORE — An extensive computer fraud scheme involving at least \$500,000 and possibly directed by a religious sect has been uncovered at the Social Security Administration (SSA) office in neighboring Woodlawn.

According to the Secret Service, an SSA benefits authorizer allegedly directed agency computers to process fraudulent disability claims for herself and several accomplices during an 18-month period. Records of the transactions were reportedly erased before computer audit reports were produced, and none of the missing money has been recovered.

Details of the alleged crime were made public when Janet Blair, an SSA employee, was arrested here Feb. 19. Stella Abrams, a Philadelphia resident, and Blair's brother-in-law, now serving time in a Pennsylvania federal prison on an unrelated charge of receiving stolen Treasury Department checks, were indicted as accomplices.

Secret Service agents are continuing their investigation in Philadelphia, California and Washington, D.C., as well as Baltimore. Andrew Berger, head of the Secret Service office here, said agents are checking into the possibility that the scheme was directed by members of the Bilalians, a black Muslim sect.

The incident has raised questions about the adequacy of computer security at the SSA central records facility. Berger said the investigation has uncovered "a lack of safeguards" and that the missing half-million dollars

(Continued on Page 7)

## Chinese DP Suffering From Cultural Revolution

By Phil Hirsch

CW Washington Bureau

Computing in the People's Republic of China (PRC) is still suffering from the effects of the Cultural Revolution, according to computer scientists who attended a conference in Peking last fall.

The Chinese participants, who included scientists and academicians from a number of research institutes and universities, seemed quite competent and well-read, but their questions reflected a lack of practical experience, the U.S. visitors observed.

The conference was organized by the Asia Foundation, funded by the Rockefeller Foundation, and included participants invited from the

## Users Must Buy Program Products IBM Stops Updating VM/370 Free

By Brad Schultz

CW Staff

WHITE PLAINS, N.Y. — IBM's VM/370 operating system will no longer be enhanced without charge.

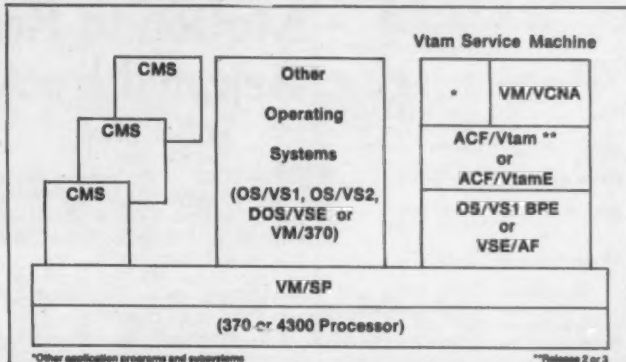
In a recent announcement of several program products to enhance the operating system, IBM issued a rare "directional statement" saying that future VM/370 enhancements would be made through licensed program products, which carry a monthly charge.

At the same time, the firm said that the previously free VM/370 System Control Program (SCP) itself "will be enhanced minimally, if at all."

The program products announced were designed to enhance the communications portion of the operating system and to make Systems Network Architecture (SNA) features more accessible to VM/370 users.

As a complex of communications software features, VM/370 supports interconnected virtual machines that execute software concurrently.

Based on a package called the VM/370 System Product (VM/SP), the enhancements from IBM's Data Processing Division bring the full gamut of



VM/VCA and the other packages that enhance the VM/370 System Control Program comprise what IBM calls the "Vtm service machine." This "machine" can also hold applications software and subsystems such as CICS/VS that allow terminals to serve as operator consoles for virtual machines.

SNA capabilities to the terminal level of decentralized and end-user networks, a spokesman said. As a result, users will improve their data communications and programmer productivity and have new applications opportunities, he added.

After VM/SP deliveries begin this September, IBM will probably make no further revisions of its VM/Basic System Extensions or VM/System Extensions program products, in addition to stopping enhancements to the SCP.

(Continued on Page 8)

## DG's First DBMS Runs on Eclipse

By Marcy Rosenberg

CW Staff

WESTBORO, Mass. — Data General Corp. brought out its first data base management system (DBMS) last week, designed to run on commercial Eclipse minicomputers under the Advanced Operating System (AOS).

Known as DG/DBMS, the software

is said to conform to the Conference on Data Systems Languages' (Codasyl) most recent (1978) specifications and to manage up to 4.4 billion characters of information contained in up to 16 disk subsystems.

DG is targeting the DBMS ultimately as an upgrade path for users of its Infos file management system software, which runs on AOS Eclipse C/150, C/350 and M/600 systems, according to Roy Schulte, product manager for DG/DBMS and Infos.

Schulte noted, however, that DG does not expect to see many conversions from Infos to the DBMS in the short term because to do so will require that users engage in a major system redesign effort and "rethink the way their company operates."

So for AOS Eclipse users not ready to jump from Infos directly to DG/DBMS — and for potential new users — the firm also introduced Infos II, an enhanced version of the file management system that adds logging, hard crash recovery and fast load utilities.

What prevents Infos II from being a true DBMS is that it does not offer data independence, a feature achieved in DG/DBMS through the Data Definition Facility (DDF). DDF sets up control information for the data base, allowing users to access data base information in any desired format, regardless of the format in which it is stored.

Schulte noted that DDF is not a data dictionary because it does not provide cross-reference reports to show which programs use what data items. DG did not provide this capability, he said, because it wanted to keep the DG/DBMS license fee at \$9,500.

Installations wishing to document their data in this way, however, either

(Continued on Page 8)

## DP Manager Earned \$27,100 In 1979: Survey

By Ann Dooley

CW Staff

WILLOW GROVE, Pa. — DP managers are the third highest paid middle management group in the U.S., following plant managers and sales managers by about \$2,600 annually, according to an Administrative Management Society (AMS) survey of 20 middle management groups.

As of Sept. 1, 1979, DP managers' salaries averaged \$27,100, an 8.4% increase from the \$25,000 average salary in 1978. Among the competition, plant managers ranked first, earning an average salary of \$29,700 annually, and sales managers were second at \$28,000 a year.

(Continued on Page 6)



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## To Launch Service Next Year Appeals Court Gives OK to SBS

By Phil Hirsch

CW Washington Bureau  
 WASHINGTON, D.C. — A U.S. court of appeals here last week unleashed Satellite Business Systems, the satellite communications carrier owned by subsidiaries of IBM, Communications Satellite Corp. (Comsat) and Aetna Casualty & Surety Co.

The court overturned an earlier ruling that barred SBS from going into commercial operation. The company

will now be able to launch service on its previously announced start-up date, January 1981.

Five customers are signed up at the moment, an SBS spokesman said, but he did not identify them. The five will be serviced through a total of 15 earth stations dispersed throughout the U.S.

The tribulations of SBS began in February 1977, when the Federal Communications Commission (FCC) agreed to let the company become a common

carrier. Three prospective competitors — Western Union Telegraph Co., American Satellite Corp., and AT&T plus the Department of Justice, appealed that decision.

All four appellants were unhappy because the FCC had failed, they said, to explore the anticompetitive aspects of allowing SBS to become a carrier. Since two of the partners — IBM and Comsat — are large organizations with extensive financial resources and recognized expertise in computers and satellite communications, it was alleged that SBS would discourage others from entering the satellite communications marketplace.

The FCC's basic response to this argument was that a large, well-financed and expert organization like SBS is needed to compete effectively against AT&T. The commission also said SBS had proposed innovative services for which there is an immediate market demand.

Early in 1978, however, a three-judge panel of the Washington appeals court overturned the FCC authorization. SBS then asked for a hearing "en banc" by the full appeals court — and last week won a reversal of the panel's decision.

SBS President Robert C. Hall called the reversal "a major milestone" for his company. In affirming the FCC's 1977 authorization, the appeals court resolved "issues that have been pending for four years concerning our ownership structure and related questions about the authorization of our services," Hall added. "We look forward to implementing our system free of any further doubt with respect to these matters and to introducing our innovative services in early 1981."

## Motion to Remove Edelstein Rejected by Appeals Court

By Connie Winkler

CW Staff

NEW YORK — The Second Circuit Court of Appeals has rejected IBM's motion to remove Judge David N. Edelstein from the now five-year-old U.S. vs. IBM antitrust trial.

A three-judge appellate panel said IBM failed to prove that Edelstein is biased against the firm.

IBM petitioned the court for Edelstein's removal last Sept. 14, 1979. At that time the appeals court urged settlement talks because of the length and expense of the litigation, which was filed 11 years ago.

"To the best of our knowledge, no litigation has taken so much time and involved such expense," the appeals judges said.

The appeals court decision also made these points:

- This was not a ruling on the merits of the case — if Edelstein has made errors, that can be decided on appeal.
- Assigning a new judge to pick up

the case after 100,000 pages of transcript, as IBM petitioned, would be almost impossible.

- Statistics alone do not establish the necessary extrajudicial bias. IBM's computers counted 86% of the 10,000 oral motions made and 74 out of 79 written motions in favor of the Justice Department. "There is no authority for and no logic in assuming that either party to a litigation is entitled to a certain percentage of favorable decisions," the decision said.

- This is not the first time IBM has gone to the court of appeals over the antitrust case. The decision cited five other IBM appeals.

- The justices commented on "one of the more bizarre incidents" in the trial: Government depositions were read in the courtroom, before an empty bench, for 70 days. "This surely disadvantaged the government, and no similar procedure was followed when IBM's counsel declined to adopt it in the presentation of its defense."

## This Week

## IN DEPTH

Transborder Data Flow ..... Follows Page 60

## NEWS

Reagan Nets \$2 Million From Mail ..... 4  
 Delays, Missing Links Plaguing 8100 System ..... 5  
 IEEE Breaks Off Exchange With Soviet Engineers ..... 7  
 Crime Expert Foresees DP-Aided Murder ..... 9  
 Videotaped Course Perks Up Data Entry Staff ..... 10  
 H.R. 6121 Facing More Roadblocks, Revisions ..... 11  
 French Planning Teletel-Compatible Terminals ..... 12  
 Documentation: Analyst Offers Practical Tips ..... 13  
 IBMer Sees Challenges Ahead in VLSI Industry ..... 14  
 Compromise Struck in Struggle Over Sparcs ..... 16  
 Tariff for Dataphone II Delayed Until March 28 ..... 17  
 CCIA: Let Commercial Vendors Carry Mail ..... 18  
 USPS Rejects Recommendations Limiting Ecom ..... 19  
 OMB and GSA Endorse 1980 Brooks Bill ..... 20  
 Federal Information Locator System Proposed ..... 21  
 Managers on the Move ..... 22  
 Geller Lobbies for Credit Information Privacy ..... 23  
 European Bankers Decry Lack of Vendor Insight ..... 24  
 Grosch's Latest Law: Cheap Means Fast ..... 25  
 Any Disk Fits IBM CPUs, Consultant Testifies ..... 28  
 Turnaround Time ..... 29

## EDITORIAL

Editorial: Reining In Federal DP ..... 30  
 Human Connection: Business Can Do More ..... 31  
 Why Has the Revolution Failed? ..... 31  
 Taylor Report: Sabotage Protection Lacking ..... 31  
 Tale of a Turncoat a Question of Price ..... 32

## SOFTWARE &amp; SERVICES

'Westl' Gets Access Control Method ..... 37

Form Letter Generator Keeps 50 Million Addresses 38  
 Data Base Control System Available for Series/1 ..... 41  
 IBM, DEC Users Gain General Ledger System ..... 42  
 Datapoint CPU Users Get Remote Diagnostics ..... 43  
 Small Shop Installs Production Control Package ..... 44

## COMMUNICATIONS

Telex Brings Out Rival for IBM 3101 ..... 45  
 Tektronix 4000, Plotter Tied ..... 46  
 Forty-Terminal Net Ends Firm's DP Queues ..... 48  
 Intelligent Controller Built Into Remote Printer ..... 50  
 Regulation Seen Telecommunications' Impetus ..... 51  
 Communications Planners Seen Ignoring Cities ..... 52

## SYSTEMS &amp; PERIPHERALS

STC Introduces Tape Subsystem Line ..... 53  
 DDP Strategy Aids Canadian Firm's Cash Flow ..... 54  
 System Aids Plant's Energy Conservation ..... 55  
 Boston Fire Fighters Blaze DP-Mapped Trails ..... 56  
 Hospital Cuts Lab, X-Ray Reporting Time ..... 57  
 COM Gives Daily Updates of Job Bank Listings ..... 60

## MINIWORLD

Alpha Micro Small Business Line Debuts ..... 61  
 System Links Host MPU, LSI-11s ..... 62  
 Big Bertha Shrinks DP Load for Textile Plant ..... 63  
 Controller Ties Florida Data Printers to CPUs ..... 68

## COMPUTER INDUSTRY

Telex Plans to Match All IBM 3270 Products ..... 67  
 Doubling of Large-Scale Installations Reported ..... 67  
 Thomson CSF Forms DP Arm ..... 68  
 DBMS, DRMS Shipments Seen Rising 74% ..... 70  
 Sales Up 31%, Earnings 22% in HP First Quarter ..... 71  
 U.S. vs. IBM Hears 360/92 Projection Figures ..... 72  
 Vendors Warned of WP Quagmires ..... 74



A message from John R. Bennett,  
President, Applied Data Research,  
to firms considering DB/DC systems.

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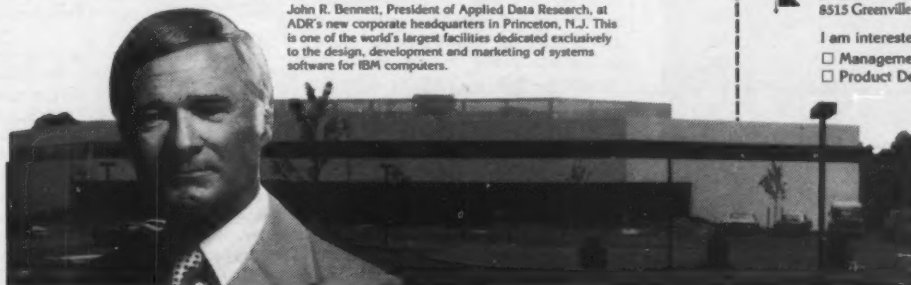
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John R. Bennett, President of Applied Data Research, at ADR's new corporate headquarters in Princeton, N.J. This is one of the world's largest facilities dedicated exclusively to the design, development and marketing of systems software for IBM computers.



## In Less Than Four Months Reagan Nets \$2 Million From Mail

By Marguerite Zientara  
CW Staff

WASHINGTON, D.C. — "Ronald Reagan is a tremendously well-known commodity and therefore a very well-received and successful letter-signer," according to the head of the Reagan for President Committee's direct mail fund-raising campaign, which has netted almost \$2 million since Nov. 13.

Roger Stone, who has been involved with direct-mail fund-raising for seven years — "a very long time when you're 27 years old" — now heads both the fund-raising and political persuasion mailing efforts as the committee's director of finance communications and deputy political director.

While the Reagan persona is certainly a large part of the effort's success — as witnessed by Reagan's overwhelming victory in last week's New Hampshire primary — the computer- and word processing-based technology behind the letter-writing campaign

cannot be underestimated.

In direct-mail efforts, vast lists of names, addresses, political and interest group affiliations and previous donations can be stored on computer tape for eventual feeding to laser printers or word processors.

By culling from such lists the names of individuals with specific interests or donors who have given at particular monetary levels, direct mailers can aim "personalized" letters at those most likely to respond favorably.

"Our people are used to a tremendous amount of personalization," Stone noted, "and that does have a very definite effect" on the success of our appeals.

Stone has sent out an average of 250,000 letters monthly for a total of about 1.5 million letters since November. Divulging one of the secrets of the campaign's success, he said, "You should never, in my view, mail out any letter without asking for money.

"The fund-raising letter has a much stronger pitch for funds" compared with a political persuasion letter, in which the request for funds is "almost incidental," but always there.

Another criterion for success is timeliness, Stone explained. "Our mailings are based on what the current political happening is, whether it's Iowa or New Hampshire, whatever the goal is.

The committee is presently concentrating heavily on Vermont and Massachusetts, both of which have primaries tomorrow. It is also concentrating on South Carolina, Alabama, Georgia and Florida, where Southern primaries will be held March 11.

To mail such large volumes of letters, the direct-mail effort draws on a file of 125,000 contributors nationwide and "two to three million" Republican voter names. This file is stored in Dallas by Vought Corp. which uses an IBM 370/165 computer with 12M bytes of main memory and 3330 and



Ronald Reagan, whose direct-mail campaign has netted \$2 million since Nov. 13, recently visited a Brockton, Mass., shoe store in his quest for the Presidency. That state's primary will take place tomorrow.

3350 disk storage.

Why Texas? "Finding someone who does a very good job on the Federal Election Commission material is difficult," Stone explained. "Vought has been excellent in its record storage, accessibility and its ability to do some technically difficult programming."

The Los Angeles branch of the Reagan Committee formerly used an IBM System/6 word processing system and, by means of phone lines, was connected through a terminal to Vought Corp.

This connection no longer exists, and the committee presently has no in-house computer equipment.

When the direct-mail staff wants to send letters using Vought's stored information, Vought now ships the tapes to the committee, which then disperses them to printing companies in the appropriate area of the country.

Two D.C.-area firms that have done laser printing for the committee since January are Wiland & Associates, Inc. in Culpeper, Va., and Telecommunications Industries, Inc. in McLean, Va. Wiland uses an IBM 3800 laser printer, while Telecommunications Industries uses a Digital Equipment Corp. PDP-11/70-driven Xerox 9700 laser printer.

Telecommunications Industries, which sent out 160,000 letters three weeks ago for the Reagan committee, produces customized missives on Reagan's letterhead, which are "signed" by the former governor.

Not all letters are personalized, however, because the process is as expensive as it is effective. Lower dollar donors, for example, receive uniform offset-printed requests, which are much cheaper to produce and send out.

Besides state-by-state voter lists and lists rented from brokers, Ronald Reagan had an almost 500,000-piece mailing list from the 1976 Presidential campaign.

"That list then became the property of Citizens for the Republic, the political action committee that Reagan formerly chaired, and the Reagan for President Committee has rented that list from them at the fair market price," Stone said.

Rented lists from brokers result in one-shot attempts to persuade or raise money, unless by coincidence someone appears on more than one list. In contrast, past contributors can expect to get "a large number of [personalized]

(Continued on Page 5)

## Half Baker's Funds Raised by Mail

By Marguerite Zientara  
CW Staff

WASHINGTON, D.C. — Sen. Howard Baker, who placed a solid third among Republicans in last week's New Hampshire Presidential primary, has raised \$1.7 million since July — about half the total \$3.3 million he has raised so far — through computerized direct-mail techniques.

Baker's finance director, Bruce McBrearty, has "no idea" how many fund-raising letters go out each month, or even the total number sent out since the campaign began, but it is safe to bet there have been a lot. Monthly averages for other Presidential hopefuls range from 50,000 to 250,000, according to staff members of the various committees.

Although McBrearty and his direct-

mail staff orchestrate the letter-writing itself and decide exactly where in the nation the letters will go, they depend almost entirely for file maintenance and letter production on Wiland & Associates, Inc. of Culpeper, Va.

A DP service bureau that serves the direct-mail marketing industry exclusively, Wiland uses an IBM 360/65 with 1M byte of memory and a 360/30 that drives five 1,100 line/min IBM 1403-N1 impact printers for such additional tasks as merge and purge and response analysis, a company spokesman said.

In addition to "a number of political candidates," the firm's clients include general-interest fund-raisers, magazine publishers and mail-order houses.

Baker is being "sold" as a candidate

with broad appeal for both Republicans and Democrats. Therefore, the Tennessee Republican letters go out to members of both parties who are believed most likely to be "compatible" with his philosophy, the senator's finance director said.

Sources for Baker mailing lists — 80% of which are rented from list brokers — include periodical subscriber lists, special-interest group membership lists and "proven contributor files.

"If we feel a [rented] list would be responsive to an appeal for Sen. Baker, we test it," McBrearty said.

Most rented lists, used only on a one-time basis, are not stored on computer. The list of past contributors, however, is maintained by Wiland. This list includes the name, address, occupation and principal place of business of a donor — as required by the Federal Election Commission — and the amounts of contributions.

The list increases continually because the McBrearty staff continues to search for new contributors.

As for the strategy behind the letters: "The Senator basically explains why he thinks he should be President, where he stands on some of the issues that are important to potential contributors and why he would like them to consider contributing to his campaign," McBrearty said.

### Personalized Approach

"I think that individuals like to receive personal letters," McBrearty observed, and every letter is personalized except for those sent to a person with only initials instead of a first name.

When the computer comes upon a name with initials only, it is programmed to print "Dear Friend" because the recipient could be a Mr., Mrs. or a Ms.

While Baker's direct-mail staff made a special effort to "blitz" New Hampshire and other primary states with political persuasion mailings, the effort did not concentrate on fund-raising in those particular areas, McBrearty said.

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# For Distributed Operation Missing Links Plaguing IBM's 8100 System

By Tom Henkel  
CW Staff

Moving from a centralized to a distributed DP environment can sometimes be a harrowing experience. IBM is finding out just how harrowing it can be with its 8100 system.

IBM's first major product for users who want to go the distributed route, the 8100 is apparently plagued with problems in its Data Management Systems/Distributed Processing Programming Executive (DMS/DPPX) operating system, according to user reports and industry analysts.

The DPPX operating system is the more complex of the two announced with the 8100 [CW, Oct. 9, 1978]. It can be used in either a stand-alone or as part of a distributed processing system.

The second operating system — the Data Management System/Distributed Processing Control Executive (DMS/DPCS) — can be used only in networks that are tightly controlled by a host 370 mainframe.

## Missing Links

So far, IBM has succeeded in getting DPPX to work in a stand-alone environment, but there seem to be problems in making the communications link to a host system, sources reported.

## Mail Campaign Nets \$2 Million

(Continued from Page 4)  
appeals," he added.

As for the composition of the letters, "I write them, Reagan works them over and then they go into the field," Stone said.

## Telling the Truth

From "almost incidental" to entirely personalized in its appeal for money, the direct-mail letter's success lies in "telling the people the truth. If you tell them about your campaign and how it's going and what you need the money for, suggesting a dollar amount based on their record of previous giving, the people will respond," he said.

On the other hand, "if you aren't informative, and if you're not honest or believable, you don't raise any money through the mail."

Although direct-mail is obviously working very well for the Reagan committee, the director believes it has definite limits. "Direct mail will help maximize the turnout of your supporters, but television in my view is a more effective persuasion tool," Stone concluded.



That's Not Exactly What I Meant by Computer Security, Barney.

The fact that two program products are missing — namely, the DPPX/Host Command Facility (DPPX/HCF) and DPPX/Display Management System (DPPX/DMS), a remote job entry feature — as well as comments from test site users support allegations of communications problems.

One user trying to link DPPX 8100 to a 3033 running Vtm said he is somewhat stymied as to what the problem is. The user said he has narrowed it down to a malfunction in the DPPX/Distributed System Executive (DPPX/DSX) which is supposed to control data streaming and communications between the host and the 8100.

However, the user cannot figure out

whether the problems are nested in the 3033 mainframe or in the 8100. Adjustments to both have provided little success, he said.

Asked what sort of problems developed during a linking attempt, the user replied that the 8100-3033 combination "does very little."

## Cobol Compiler

The other major stumbling block seems to be the 8100's DPPX/Cobol compiler. Although test users seem pleased with IBM's recent progress in getting the compiler to do stand-alone batch jobs, an industry analyst said getting Cobol to run in that environment is not a great accomplishment.

Since IBM has only accomplished that much in the past two weeks, an industry analyst said, it appears the firm is about six months behind schedule.

Delays in delivering 8100 software are also creating problems for another user. Advanced Computer Techniques Corp., which is trying to prepare a comparative analysis of the 8100 CPU based on in-house benchmark tests, has been forced to delay that report until the end of April or early May because it cannot complete its test on its 8100 with DMS/DPPX. The firm has been limited to using the 8100 CPU for data streaming operations, a spokesman said.

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# Chinese DP Seen Hurt by Cultural Revolution

(Continued from Page 1)

nese are active in selling their capability."

The teaching of computer science in China "has only just begun to be seen as of major importance to the development of a modern computer industry," the BCS report said.

A more detailed view of computer science education in the PRC comes from conference notes prepared by one of the U.S. delegates to the conference — Prof. N.B. Dale of the University of Texas.

At the University of Peking, Dale reported, 80 students a year are admitted to the computer science and technology department; about 30 specialize in software. There are two other schools in Peking and one in Nanking with similar programs:

- Tsing Hua University enrolls approximately 100 computer science and engineering students annually. The course offerings include principles of organization, programming, data structures, discrete mathematics and the following languages: Fortran, Basic and Algol '60.

Dale noted that although all of these courses are apparently in the Tsing Hua University curriculum, "only some of them are currently being offered." He added that the university is planning to offer courses in the theory of computation and operating systems "and would like to offer a course in data base management, but does not have anyone who could teach it."

- The People's University of Peking emphasizes courses in computer applications. Those currently offered include introduction to data processing, programming languages (Algol '60, Fortran, Cobol), Pascal data structures, discrete mathematics probability theory and operations research. Forty to fifty students are admitted yearly.

- The University of Nanking enrolls approximately 200 computing students, Dale reported. One-third of the courses are hardware-oriented and the rest are devoted largely to software.

Faculty seminars are being organized on structured programming, but it is not being taught yet, he added.

The University of Nanking also has a program of general computer education for nonstudents, Dale's notes said. It consists of three main parts: "simple two-hour lectures for provincial leaders; longer lectures — 12 hours over a two-week span — for factory workers; a one-semester-long course, given at the university or at a particular enterprise, to prepare instructors on special topics.

"There was a feeling of urgency that management at every level must be rapidly educated about computers and their use," the notes indicated.

Dale's conference notes provide a

number of other insights into the state of computing in the PRC. For example, intertask communication in IBM OS/VS2 is being "intensively studied."

Every Chinese university seems to be working on development of a Chinese keyboard. Strong interest was expressed in one developed by Loh Shiu Chang, the leader of the visiting delegation, who is professor of computer science at the Chinese University of Hong Kong.

At a session on management information systems and computer networks, the discussion included information retrieval, network design, optical communications, microprocessors, satellites, different methods of routing

traffic through a distributed network, analysis and comparison of communications processors used in public data networks, and interconnection to international data networks.

According to Dr. Jack Moshman, a widely known DP systems consultant who attended the conference, the Chinese "seemed starved for information on medical data processing and on what literature is available in the field."

Moshman, who participated in a session on medical data processing, said the Chinese were particularly interested in such things as automatic interpretation of EKGs, special languages for hospital applications and drug interaction information.

## DP Manager Earned Average \$27,100

(Continued from Page 1)

But with an average salary of \$27,100, DP managers fared well above the average managerial yearly income of \$21,445 for the 20 groups. Salaries for middle managers overall increased 6.3% last year compared with the DP managers' salary increase of 8.4%.

The AMS findings also show that when broken down, salaries varied substantially from one type of employer to the next and among different areas of the country. DP managers working at utilities and those in the western section of the country earned the highest salaries overall, displaying nearly \$5,000 and \$1,700 differences between highest and lowest salary figures, respectively.

While DPers working in utilities were paid most, managers in sales and distribution placed lowest overall. Utilities paid their DP managers an average \$30,300 salary, up from \$28,100 in 1978 and nearly \$3,000 above that of the runner-up category — banking, insurance and financial institutions — which paid their managers \$27,500, up from \$25,200 a year ago.

Coming in a close third was a category called "other types," which included government, medical, educational and employment firms and which paid its DP managers \$27,400 on the average — a \$2,400 yearly increase from 1978 figures.

DP managers in manufacturing and processing firms earned the fourth highest salaries with an average of \$26,700 — an increase over the 1978 average salary of \$24,900. Sales and distribution came in last with managers earning \$25,600 on the average, up from a 1978 average of \$23,000.

### Geographic Categories

In a geographic breakdown, salaries of DP managers in the western region averaged \$28,100, up from \$25,700 a year ago. Managers in the east-central U.S. earned \$27,600 on the average, showing a \$3,200 increase from 1978.

DP managers in the southern section of the country slipped from a tie for first place in 1978 to third place in 1979. The average salary for this region was \$27,200 compared with 1978's average salary of \$25,700.

Eastern U.S. firms paid DP managers

an average of \$26,800 annually compared with \$25,000 on the average a year ago, and managers in the west-central section of the U.S. earned an average of \$26,400 as compared with \$24,200 in 1978.

### Industry Breakdown

In the East, utilities offered the most generous salaries, an average of \$30,400. Banking, insurance and financial firms ranked second, paying their managers an average salary of \$27,500.

In the east-central U.S., DP managers working for utilities again earned the highest annual salaries, averaging \$30,500. The next highest salaries were paid by banking, insurance and financial institutions, where DP managers earned \$28,000 on the average, followed by manufacturing and processing firms, paying an average \$27,700 salary.

Although rankings according to job category in the west-central U.S. were similar to those of the nation as a whole, actual dollar amounts paid to managers differed from the national average. Salaries averaged \$30,700 in utilities; \$28,100 in banking, insurance and financial firms; \$26,000 in "other types"; \$25,700 in manufacturing and processing firms; and \$24,500 in sales and distribution.

In the South, by ranking of first to last, DP managers earned an average of \$31,200 working at utility firms, \$29,000 at "all other" firms and \$26,800 at banking, insurance and financial firms.

DP managers in the western section of the country earned an average salary of \$29,700 at manufacturing and processing firms — the only section of the country where utilities were not ranked number one.

AMS, a professional society, surveyed 3,369 companies in 114 U.S. and Canadian cities and obtained data from 63,616 DP managers, with more than 5,000 of the managers coming from Canada. (Only those figures relating to U.S. employees were presented here.) Statistics on individual cities are available in the complete report.

The AMS Guide to Management Compensation — 1980 contains data on employee benefits in addition to salary figures and is available for \$75 (\$50 for AMS members) from AMS at Maryland Road, Willow Grove, Pa. 19090.

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# 'Current World Conditions' Cited IEEE Breaks Off Exchange With Soviet Society

By Marguerite Zientara  
CW Staff

NEW YORK — The Institute of Electrical and Electronics Engineers (IEEE) has suspended its technical exchange agreement with the Popov Society, the leading Soviet electrical engineering society, because of "current world conditions."

The action will result in the cancellation of a joint program planned with a Popov delegation at the IEEE's Elec-

tro 80 conference, set for May 13-15 in Boston. It will also mean the withdrawal of a 10-man IEEE delegation from the May 27-29 Popov Society Conference in Moscow.

While the IEEE's action was seen by some as "largely symbolic and in keeping with President Carter's technology embargo of Russia," an IEEE spokeswoman emphasized that the organization is multinational, not just American. There are 200,000 IEEE members worldwide, 170,000 of whom are American.

The suspension will have no effect on its open admission policy for individual IEEE engineers attending its conferences, the society announced.

The IEEE board's action, taken at a regularly scheduled meeting last week, empowers the society's executive committee to "reinstate the exchange as appropriate."

## Statement on Sakharov

The action came 11 days after a separate statement was issued jointly by IEEE President Leo Young, the president of the Association for Computing Machinery (ACM), Daniel McCracken, and American Mathematical Society President Peter Lax concerning the exiled Soviet physicist Andrei Sakharov. Sent to the Russian ambassador to the U.S., that statement charged that the recent "arrest and

banishment" of Sakharov "will be felt as a personal loss by scientists and engineers everywhere."

There has been no response to either the IEEE action or the joint statement. "I'm encouraged to think that these kinds of actions do have some effect," McCracken commented, "judging by what I hear from people who have been able to emigrate [from Russia]."

McCracken cited the recent case of three U.S. physicians who visited Russia to treat DPer Anatole Sharansky, imprisoned since July 1978 on treason charges. While the doctors were not allowed to see Sharansky, shortly after their visit Sharansky was treated by Soviet physicians, McCracken said.

## Fraud Scheme Takes \$500,000

(Continued from Page 1)

could be "just the tip of the iceberg."

Berger's office is checking computer audits at the DP facility for further signs of criminal activity. The center processes claims for some \$8 billion in Social Security benefits every month, according to the agency. The checks are issued by the Treasury Department through disbursement centers across the country.

John Trollinger, an SSA spokesman, said the agency is "continuously reviewing and revising" its computer security measures. He added the investigation has turned up a number of areas of security that are slated for special reconsideration.

The Baltimore Sun has reported interviews with SSA employees who termed the security arrangements "a joke," citing terminals left signed on and accessible to unauthorized personnel. Trollinger denied, however, that there are gross security problems at the facility.

Blair was responsible for preparing batch material for computer input and did not have direct access to the computer system, Trollinger said. According to Berger, the Secret Service is looking into the possibility that an accomplice or accomplices inside the DP center erased the records of the illegal transactions.

As to how the alleged fraud was actually perpetrated, Berger said "we're still trying to figure it out ourselves" and called the scheme "very sophisticated."

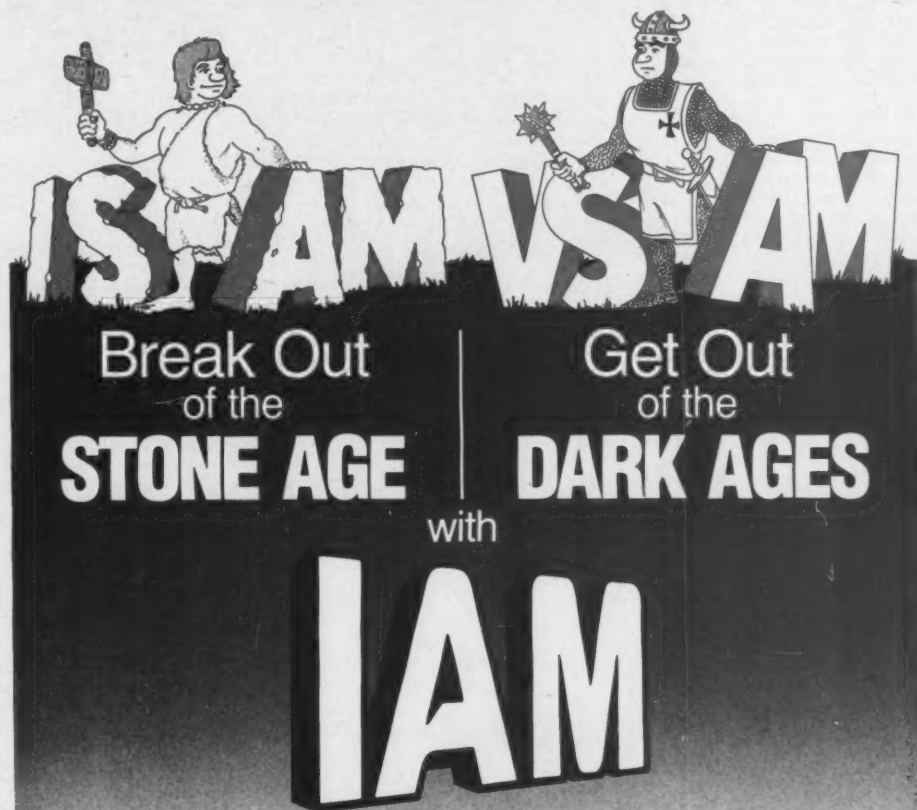
## Discovery of Problem

The problem at Woodlawn was discovered when a bank official in Philadelphia became suspicious about an account that had been opened with several Treasury checks made out to various names and a government bond that later proved to have been stolen.

The bank manager contacted the Philadelphia Secret Service office which initiated the investigation that led to Blair, Berger said. He explained that accounts were opened in several cities to cash the allegedly stolen checks, after which the accounts were quickly closed.

Indicted on 43 counts of conspiracy to defraud, aiding and abetting forgery and related charges, Blair was jailed here in lieu of \$100,000 bond. SSA said she has been transferred to "a less sensitive position" pending the outcome of the case.

Meanwhile, the Secret Service is continuing to look for further missing monies.



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# IBM No Longer Giving Away VM/370 Updates

(Continued from Page 1)

Hence, VM/SP has become the focal point of IBM's strategy for supporting decentralized users and end users of multisystem data networks, the spokesman indicated. VM/SP requires at least 384K bytes of user-accessible memory and will support 370/158 multiprocessor (MP), 370/168 MP and 3033 MP facilities with up to 32 channels per MP configuration.

In conjunction with VM/370 Release 6, VM/SP reportedly adds the following functions to capabilities already featured by IBM virtual machines:

- Enhanced attached processor support.
- A Conversational Monitor System (CMS) editor and Exec interpreter.
- Support for IBM's Model 3278-5 and 3279 CRT terminals.
- A single console image facility for controlling multiple virtual machines.
- Dedication of remote Model 3270 printers to a guest virtual machine.
- A CMS OS loader capability

## Other Products Announced

With a 370 or 4300 processor and VM/SP as prerequisites, the other software products announced as VM/370 enhancements are the VM/Vtm Communications Network Application (VM/VCNA), the VM/Pass-Through Facility, the OS/VS1 Basic Programming Extensions (BPE) and the Remote Spooling Communications Subsystem (RSCS) Networking Release 2.

Under CMS, VM/VCNA reportedly gives terminal operators access to SNA-based applications running on any other system in an SNA network. Besides putting more remote software within the reach of a given terminal at an SNA network node, the program will facilitate line utilization by reducing operator response time, the spokesman claimed.

VM/VCNA provides an interface between VM/370 console support and IBM's Advanced Communications Function (ACF)/Vtm or ACF/VtmE

applications software. When used with ACF/Vtm or ACF/VtmE, the VM/VCNA package allows VM/370 users to access the full range of multi-system networking facilities available with ACF products, according to the spokesman.

The advantages of joining VM/VCNA to ACF applications are said to include the following capabilities:

- Terminal sharing in an ACF multi-system network, where the VM/370 terminals can access SNA-based communications applications that reside on non-VM/370 systems.
- Resource sharing of communications controllers and lines via ACF/Vtm or ACF/VtmE.
- Network management and control for services controlled by what IBM calls the Vtm service machine (see figure on Page 1) through the Network Communications Control Facility (NCCF) and the Network Problem Determination Application (NPDA).

- Multiple controller attachment to a single communications line.

The VM/Pass-Through Facility allows VM/370 users connected via 3276, 3277, 3278 and 3279 CRT terminals to interactively access applications in another computer system via the 3270 binary synchronous protocol.

When connected to an SNA-based system under that protocol, the spokesman said, the VM/Pass-Through user will have full access to the SNA network. Such a user will interact with the host application and be presented with terminal screen contents that duplicate what the host would display to a directly attached terminal, he explained.

The VM/Pass-Through software reportedly emulates a remote IBM 3271 or 3274 terminal on a point-to-point or multipoint leased-line connection to another node, which is programmed to support the remote 3270.

As for the other VM/370 enhance-

ments, the OS/VS1 BPE package was said to support VM/VCNA and the VM/370 VMDump facility, which allows a VSI virtual machine to place a system dump in the VM/370 spool area. And RSCS Networking Release 2 offers job and file transfer capabilities for remote job entry.

IBM plans to start deliveries of VM/VCNA with OS/VS1 in September. VM/VCNA with ACF/Vtm will be available in December and the ACF/VtmE version of VM/VCNA is slated for delivery about a year from now.

The Pass-Through Facility, OS/VS1 BPE and RSCS Networking Release 2 will be available in April, September and October of this year, respectively, the spokesman reported.

The monthly charge for VM/SP and VM/VCNA, which requires at least 1M byte of main memory on its host processor, is \$250 and \$225, respectively. The Pass-Through Facility's charge is \$100/mo.

## DG's First DBMS Runs on Eclipses

(Continued from Page 1)

will have to purchase an outside vendor's data dictionary or write their own documentation, he remarked.

### Cobol Interface

As a Codasyl DBMS, DG/DBMS was designed to handle information with a network data structure and to interface only with Cobol.

A minimum 768K-byte Eclipse system configuration is recommended to run the DBMS, AOS and "do a reasonable amount of applications processing," Schulte said. DG's direct end-user marketing effort will be aimed at Fortune 500 companies that have an in-house programming staff, he added.

DG/DBMS provides automatic transaction rollback and logging/recovery functions, said to protect logically complete data base updates and to roll back partial updates to ensure

that incomplete transactions do not occur in the data base. The system controls concurrent updates by multiple on-line and batch programs.

In addition, the DBMS automatically compresses and stores data in variable-length records and provides data security at the data base, record and field levels.

DG/DBMS supports data base, sequential, random and multikey access methods, Schulte said.

### Two Monitors

DG/DBMS modules include two runtime monitors and four stand-alone utilities that support data base operations. The two monitors collectively form the data base control system (DBCS).

One, the data base monitor, is controlled through the Eclipse system's operator display console. It keeps track of the open data bases and of

current data base users and handles major error conditions.

Called the data base controller, the second monitor interprets and executes all data manipulation language commands and so performs the interactions between the data base on disk and users' application programs.

### Stand-Alone Utilities

The four utilities included with DG/DBMS are DDF, Interactive Data Manipulation Language (IDML), Rebuild and Dbscan. IDML reportedly allows programmers to read, write or update individual data base records interactively at a CRT screen without having to write a Cobol program.

A hard crash recovery facility, Rebuild lets users reconstruct their data base from a log tape when a severe problem, such as a disk head crash, prohibits access to it.

With Dbscan, technical personnel can check the integrity of the internal data base structure and monitor data base status through such Dbscan statistics as the number of records in the data base or the amount of remaining available space.

A fifth utility, Interactive Query (IQ), is offered as an option and priced separately at \$2,500. A read-only utility, IQ reportedly provides English-like commands for logically retrieving information from the data base.

While Schulte contended IQ is not required to use DG/DBMS, he admitted that without it, users would need to write high-level language programs for all applications.

### Price of Infos II

Infos II, the expanded file management system, is available only for AOS Eclipse systems and not for DG's real-time Disk Operating System (RDOS); the earlier version of Infos is supported under both operating systems.

Infos II is priced equivalently to the original Infos — at \$2,500.

All license fees include installation, one copy of the documentation and one year's phone or mail-in support under DG's Software Subscription Service, DG said from Rt. 9, Westboro, Mass. 01581.



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# QWIKTERM



# Crime Expert Foresees DP-Aided Murder

By Jeffrey Beeler

CW West Coast Bureau

SAN JOSE, Calif. — Computers have already been involved in a wide assortment of crimes including fraud, theft and espionage. Someday they might even be used to commit murder, according to computer security expert Donn B. Parker.

In fact, the first known computer-aided murder attempt may have already taken place, Parker said last week at the Hewlett-Packard Co. (HP) General Systems Users Group meeting here.

The suspected murder attempt occurred only about a month ago when the air traffic control system at New York's Kennedy International Airport suspiciously malfunctioned and nearly caused a mid-air collision involving an airliner carrying Soviet Ambassador Anatoly Dobrynin (CW, Feb. 11). No one was harmed during the incident, but Parker plans to investigate the equipment failure anyway to find out whether it resulted from human tampering, as some observers have speculated.

Appearing at the HP users group meeting as keynote speaker, Parker voiced fears that the traditional traffickers in computer crime will soon be joined by much more dangerous practitioners, especially organized groups like hostile foreign powers, the Mafia and international terrorist bands. Computers are rapidly replacing bank vaults as the preferred method of "storing" money, and as the world traffic in electronic "cash" steadily grows, so does the threat that it will one day become the target of large, unscrupulous organizations with a vast capacity to cause harm.

## Two Categories

Parker, a senior consultant at SRI International, Inc. in nearby Menlo Park, divided computer crimes into two main categories: the "high incidence-low loss" types and the "low incidence-high loss" types. As its name suggests, the former variety occurs relatively frequently, but because the dollar loss involved is usually fairly trivial and because the techniques used to perpetrate the crime are usually simple, it seldom arouses much concern among computer security circles.

Just the opposite is true of the low incidence-high loss crimes, Parker said. Such misdeeds often involve highly sophisticated computing techniques and are usually perpetrated by extremely intelligent, computer-literate DP professionals.

High-loss crimes happen only rarely, but when they do occur, the cost to the public usually runs in the millions of dollars.

Exotic computer crimes have become a major source of concern among DP security experts because the results of even one such offense could prove catastrophic. Parker cited the example of a hypothetical theft from the Fedwire, which every four days transfers a dollar volume equal to the U.S. gross national product.

Unfortunately for the business community and general public, users have yet to address the problem of how to safeguard their installations from the

most sophisticated classes of computer crime. Security techniques have lagged woefully behind technological advances in the DP field, and crooks always seem to be at least one step ahead of their victims.

"We're dealing with an intelligent enemy who's playing by his own set of rules, not by ours," Parker said. "We can implement a checklist of security precautions, but the computer criminal won't attack where we've already protected our systems. He'll find out where we haven't thought to put any safeguards yet and attack there."

## Ribicoff Bill Lauded

In other observations at the users group meeting, Parker commended federal legislators for making some badly needed revisions to the Ribicoff computer crime bill.

In its original version, S. 240 "was a terrible piece of legislation written by people who knew nothing about computers," he said.

Today, however, most of the bill's weaknesses have been eliminated, although a "few glitches" remain in its definition of a computer system, Parker added.

# Clerk Charged With DP Fraud

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — A Defense Department employee has been arrested here and charged with embezzling \$45,000 by manipulating the computerized payroll system of the Military District of Washington (MDW).

Albert Coachman, 25, a civilian payroll clerk, allegedly directed MDW's IBM 370/165 to issue 32 checks between September 1979 and last month to at least six ineligible persons, who allegedly split the money with Coachman.

He and three other District of Columbia residents were arrested Feb. 19. The four were released on personal recognizance by a U.S. magistrate after embezzlement charges were entered against them.

According to Secret Service Agent Harry Ludwig, who directed the investigation leading to the arrests, MDW became suspicious after the Defense Intelligence Agency found checks had been written on its payroll to the six persons, none of whom were employed by the agency.

Checking bank records, Ludwig found that one of the six unauthorized recipients cashed military payroll checks totaling some \$6,000 and then wrote a check for half that amount to Coachman.

According to Ludwig's investigation report, filed in U.S. district court here, Coachman had responsibility for preparing batch materials for computer processing on a 1,400-person payroll and responsibility for correcting erroneous payroll transactions turned up in computer edit reports.

A preliminary hearing in the case was scheduled for last Thursday.

# COBOL programmers: Do you make these mistakes?

- Do you use subscripts when you should use indexes?
- Do you use a sequential search when you should use a binary search?
- Do you code COPY statements in a way that will have to be changed when your company switches from a 1966 to a 1974 ANS compiler?
- Do you code a MERGE statement on a 1974 compiler when a concatenated sort would be faster?
- Do you use GOTOs when you should be using nested IFs and PERFORM-UNTILs?
- Do you use flowcharts when you should be using pseudocode?

If these questions give you an uneasy feeling because you're not sure, there's a book you should get right away. It's called *Structured ANS COBOL, Part 2: An Advanced Course*. It can teach you how to use COBOL the way the best programmers in the best COBOL shops use it.

When you're through with this book, I think you'll have a new confidence in your ability as a COBOL programmer. I think you'll find that you are able to develop programs more quickly and with less frustration. I think you'll find that you need less help from your supervisor or your fellow programmers. In short, I think you'll be a better COBOL programmer...and improving your job skills sure can't hurt your career.

If all that sounds like a tall order for a \$17.50 book, I guess it shows how powerful I think this book is. In fact, as you will see later, I guarantee its effectiveness. So if you've never purchased a book by direct mail before, now's the time to start.

## What does the book cover?

Because we feel that all modern shops should develop programs using the techniques of structured programming, this book shows you how to develop programs using structured design, structured module documentation, and structured coding. In fact, chapter 1 is a crash course in structured programming.

The remaining chapters cover the language elements that are either misused or not used by the average COBOL programmer. For instance, chapter 2 shows how to code table-handling routines using indexes, the SET statement, and the SEARCH statement. Chapters 3 and 4 cover the COBOL language you need when you want to use the CALL and COPY libraries. Chapter 7 covers the SORT and MERGE statements and shows how to write COBOL sort or merge programs so they can be executed in a controlled way from start to finish. Chapter 9 shows how to process indexed files using (1) the 1968 IBM COBOL elements and (2) the 1974 standard COBOL elements. And there are also chapters on character manipulation and the debugging verbs.

Beyond the COBOL considerations, the emphasis in every chapter is on

practicality. The table-handling chapter, for instance, doesn't just teach the ANS table-handling elements. It also explains why it's more efficient to index a table than to subscript it, when to use a binary search rather than a sequential search, and how to break complex, multilevel tables down into one- and two-level tables that are easier to handle. The chapters on the COPY and CALL libraries don't just explain the COPY and CALL statements. They also show how and when the libraries should be used in developing structured programs. The sort/merge chapter doesn't just present the COBOL SORT and MERGE verbs. It also shows alternate ways to sort or merge records that are processed by a COBOL program. In short, you won't just learn advanced COBOL elements from this book. You'll also learn how to use these elements in the most efficient, most practical way possible.

## If this is part 2, what happened to part 1?

Part 2: *An Advanced Course* is the second part of a two-part course in structured COBOL. Part 1: *A Course for Novices* is designed to teach a beginner the skills he needs to become an entry-level programmer in industry. In terms of COBOL, this book teaches a professional subset that includes sequential file handling on tape or direct-access devices. And, like part 2, part 1 teaches practical, structured-programming methods of design, documentation, and coding. So a beginner will learn how to develop structured programs as he learns COBOL.

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## Firm Trims Turnover Rate by 70% Videotaped Course Perks Up Data Entry Staff

By Jeffrey Beeler

CW West Coast Bureau

SAN JOSE, Calif. — Users intent on boosting the productivity of their terminal operators might want to heed the example of Nice Corp., an Ogden, Utah-based advertising outfit. When Nice executives became dissatisfied with the declining efficiency of their data entry staff, they decided to lick the problem by administering a videotape-based training course in which each of their approximately 80 terminal operators would be required

to enroll.

Nice developed the course with the help of an outside audio-visual service firm and an independent educational consultant. From the outset the project proved an almost unqualified success, according to David Brown, the advertising company's president.

In addition to running an advertising business, Brown and his colleagues operate a telephone answering service through which consumers can order a wide variety of products advertised on television. Most calls fielded by the

answering service are in response to commercials that include a toll-free phone number as part of their sales pitch.

When a television viewer dials an advertiser's toll-free number, the call is received at Nice's answering service in Ogden, where a telephone agent notes the caller's name, address and the type of product he wishes to order. The agent also collects pertinent marketing information, including the channel number and call letters of the TV station where the customer saw the advertisement in question.

All the order information is then keyed into some 50 Infoton, Inc. Model 400 and other CRT terminals and stored in a Hewlett-Packard Co. Model 3000 Series III, processor Brown said last week at an HP General Systems Users Group meeting here.

### Inexperienced Operators

Most of Nice's telephone agents are recent high school graduates with no computing expertise and little or no work experience. As a result, they often have only a dim conception of what function the answering service performs and how their job relates to that function.

"We eventually discovered that many of the agents didn't realize their callers were television viewers," Brown said. "We assumed all along that they made the connection between the calls they were receiving and TV advertising, but apparently many of them didn't."

The telephone agents' obvious alienation from their jobs marred their data entry productivity noticeably and resulted in an unacceptably high percentage of errors and lost sales.

### Formal Training Program

To increase their work satisfaction and thus bolster their sagging productivity, Brown decided to put each of his terminal operators through a brief

but formal training program, the first such course Nice had ever offered its data entry personnel. He gained help in the project from The Video Co., a Salt Lake City-based audiovisual company, and Dr. Carol Carnie, an independent educational consultant with the San Diego School District.

Together, Brown, Carnie and the audiovisual firm produced three short instructional videotapes supplemented by a training manual and "in-service notes," which were used primarily for follow-up education.

The tapes, which cost \$16,000 and took three weeks to develop reviewed basic telephone agent skills, including the geographical-search techniques used in identifying a television station's call letters. The tapes also explained a terminal operator's role in Nice's overall organization, Brown said.

### Two Weeks Training

Since obtaining the training aids, Nice officials have found they can teach basic telephone agent skills to a raw high school graduate in about four hours and bring the individual up to the company's accepted performance standards in about two weeks.

Carnie, who joined Brown as a speaker at the HP users group meeting, credited the instructional videotapes with boosting the data entry department's morale and motivation by showing its members for the first time that they were making an important contribution to the good of the company.

Once Nice's terminal operators overcame the feeling that their jobs were menial and undesirable, Carnie said, they improved their error rates from 8% to 2% and trimmed their turnover by 70%.

Although Nice's instructional videotapes were aimed primarily at high school-aged terminal operators in a telephone answering service, a similar training program could easily be applied to data entry personnel in any company and at every level of computing expertise, Carnie explained.

## Office Automation Conference Opens in Atlanta

ATLANTA — The first Office Automation Conference, which opens here today, will have 47 separate sessions and 115 exhibits and is expected to draw as many as 15,000 attendees.

Sponsored by the American Federation of Information Processing Societies (Afips), the conference will feature a host of speakers, including Presidential Assistant Richard M. Harden, and will address itself to present, future and management needs relating to the rapid growth of word processing and the automated electronic office.

"The whole reason for doing this is because word processing has boomed in the last year," Kate Fry of Afips said.

### Session Topics

The sessions on current technology will deal with the present status of word processing, how to sell it to management and what equipment fills particular needs. Sessions on future technology will discuss new concepts in organizational structure

and a how to automate an office.

Special sessions will be held to prepare management for the advent of increased automation, Fry said.

Interspersed throughout the general program will be 13 luncheon workshops dealing with such topics as banking, engineering and legal applications. There will also be two sessions on voice technology and the future of electronic mail. Harden, who serves as the President's special assistant for information management and director of office administration, will speak on the task of making the Executive Office of the President more information-efficient.

Other speakers will include John J. Connell, executive director of the Los Angeles-based Office Technology Research Group, who will discuss industry's need to adapt DP to individual needs, and Howard Morgan of the University of Pennsylvania's Wharton School, who will deliver his remarks on automated office growth over the next 10 years.

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## Report Eyes Future Videotex

MENLO PARK, Calif. — A series of bimonthly reports on general user information systems like videotex and teletext is being offered under the direction of Communications Studies and Planning of London in association with the Institute for the Future here.

Called Context, the service will provide planners and policymakers with analyses of the new technologies, relating them to other major technological, social, economic and political changes over the next decade.

Besides the reports, Context subscribers can participate in an annual conference and consult with members of the London and Menlo Park staffs.

The annual cost for the service, which started in January, is \$8,000. Subscribers joining after January will receive all back reports and information from the Institute for the Future, 2740 Sand Hill Road, Menlo Park, Calif. 94025.



# H.R. 6121 Facing More Roadblocks, Revisions

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — The proposed Communications Act of 1980 faced further roadblocks last week in the wake of continuing controversy between the carriers, led by AT&T, and independent suppliers of on-line terminals, systems and services.

Although H.R. 6121 was passed by the House of Representatives Commerce Committee's Communications Subcommittee in January, it is now being revised by the subcommittee staff to include a number of "technical amendments" suggested by members just before they voted on the measure.

Many of the amendments are simple editorial changes, but some involve key issues. One of the latter deals with the relationship between the regulated and unregulated entities AT&T is required to establish under the bill.

One concern, a subcommittee staffer explained, is that Western Electric Co. and/or Bell Laboratories could give AT&T's marketing arm advance information on new products and services and enable telephone company salespersons to gain an unfair advantage over their competitors.

Another possibility is that AT&T operating companies, through back-door deals with the marketing subsidiary, might be able to acquire competitive products on more favorable terms than unaffiliated customers.

In addition, the subcommittee sees a need for Western Electric and Bell Labs to set up accounting records that clearly separate their activities on behalf of regulated and unregulated elements of the Bell System, the staffer continued. This separation is necessary to prevent the revenues generated by regulated operations from cross-subsidizing unregulated products and services.

## New Language

While the House bill, as presently drafted, addresses all of these concerns, there is a need for new language that will, among other things, define "competitive" products and services more precisely, the subcommittee staffer said.

The difficulty is that whatever language the subcommittee finally proposes, it is virtually certain to be opposed — by the carriers, their competitors or both.

The competitors say the bill should require divestiture of Western Electric and Bell Labs from the rest of the Bell System. They also want the Long Lines Division established as a subsidiary fully separated from AT&T's telephone operating companies.

H.R. 6121, by comparison, takes a much more limited approach. It basically requires the telephone company to establish an unregulated separate marketing subsidiary for competitive products and services plus a new accounting system capable of preventing the remaining regulated activities from generating anticompetitive cross-subsidies.

## Criticism of Bill

Opposition to H.R. 6121, as it came out of the House Commerce Committee's Communications Subcommittee in January, has been expressed by a number of critics in the past month.

Three trade associations have asked that further consideration of the bill be deferred until they have had a chance to review and comment on the latest draft. They are the Computer & Communications Industry Association, the Independent Data Communications Manufacturers Association and the Ad Hoc Committee for Competitive Telecommunications.

Meanwhile, the Justice Department has recommended that the bill be changed to require divestiture. Separate subsidiaries, "while a step in the right direction... clearly are an imperfect substitute for the fundamental structural and ownership changes the department is seeking in the AT&T case," Sanford N. Litvack, special assistant to the attorney general, said in a

letter to Congressman Harley Staggers (D-W.Va.), chairman of the House Commerce Committee.

Since the Justice Department is already trying, in its antitrust suit, to break up the Bell System, this statement is not particularly surprising. On the other hand, it suggests that the Carter Administration, which in the past has actively supported H.R. 6121, may be shifting its position.

## Cross-Purposes

Earlier, a report prepared by two contractors working for the Office of Technology Assessment (OTA), a congressional think tank, argued that promotion of competition — the major purpose of the pending legislation — is incompatible with the basic structure

of the Bell System [CW, Feb. 11].

The contractors, Harley W. Radin and Future Systems, Inc., said "manufacturing activities of Western Electric for competitive and monopoly services must be separated to ensure that no cross-subsidies can take place, or alternatively, Western Electric must offer its products to all carriers on equal terms."

OTA has vigorously denied *Computerworld's* earlier characterization of this as a "draft OTA report." However, since the agency works intimately with its contractors from the moment they begin an assignment, it is virtually certain the report reflects, or at least does not conflict with, the views of OTA officials.



Jack Gable, Vice President of Software Development for American Software, Inc., Atlanta, is talking about his first full year with WYLBUR. He's giving you good reasons why you should look into WYLBUR now. To quote Mr. Gable:

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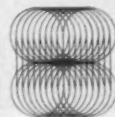
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## For On-Line Phone Directory Service French Planning Teletel- Compatible Terminals

By Phil Hirsch

CW Washington Bureau  
LONDON — France is developing a low-cost facsimile machine and a touch-sensitive input pad as accessories for a nationwide on-line telephone directory service it plans to in-

stall within the next few years. Keyboard-equipped CRT terminals will be distributed free to several thousand telephone customers, in the hope of ultimately doing away with printed telephone directories. Since the terminals will be

compatible with Teletel, a French videotex system, they will be capable of providing a wide variety of additional information.

Roy Bright, Teletel's chief salesman, discussed these and other details of the French program here last week. He is one of the speakers at Viewdata '80, the first international videotex conference and exhibition, to be held in Wembley, near London, March 26-28.

### French Plan

Bright will give an overview of the French Telematique plan. Its basic goal is to create an information society within France. The plan calls for installing interactive terminals in 30 million homes and offices by 1992, upgrading the telephone network and providing a host of on-line information services. During the next five years, Bright said, about \$27 billion will be invested in Telematique.

Two French companies, Ma-

tra S.A. and Thomson CSF, are now carrying out preliminary investigation of a prototype "mass-fax" terminal, he reported. The target is a cost per unit of about 60 francs (approximately \$140) by 1985.

Bright provided few details of the other new terminal, a touch-sensitive input pad which he referred to as a "teletewriter," except to say it would permit hand-written drawings and text to be transmitted by the French Teletel system.

### Teletel Trials

Bright, who was closely associated with development of Britain's videotex system — known as Prestel within the UK and Viewdata abroad — went to work for the French four months ago. He said that trials of Teletel, utilizing TV sets fitted with adapters, are scheduled to begin next year in Velizy, a Paris suburb.

The keyboard-equipped, black-and-white CRT tele-

phone directory terminals are being built by four French companies — (Thomson CSF, Telic, TRT and Matra). These units will be tested initially in Rennes, France. Later, the French plan to conduct a number of large-scale "wired city" demonstrations of Teletel technology. Biarritz, on the French Riviera, has already been selected tentatively as one of the sites.

Late last year, Bright added, France and Canada agreed to collaborate on development of videotex software. The Canadians have developed a system called Telidon, which reportedly has far better graphics capability than the British Viewdata system.

At the moment, the British have been far more successful than any other country in selling their videotex technology abroad, Bright admitted. Viewdata has been licensed to carriers in a number of countries, including the U.S.

But he insisted that the Teletel system "offers far more promise" and will become the international favorite within a few years.

One advantage of the French system, according to Bright, is that it is the only one offering associative search capability, thus enabling a telephone customer to access an unknown telephone number by inputting the related street address.

## Job Mart Set in Boston

BOSTON — Sixty leading DP companies from across the nation will be represented at the First Semiannual Technical Job Mart for DP professionals, engineers and technicians at the Northeast Trade Center here April 28-29.

Company representatives will be available to discuss ca-

reer opportunities with potential employees. Private interviewing areas will also be provided.

Further information may be obtained from Virginia Bingle, program coordinator, Technical Job Mart, Northeast Trade Center, 100 Sylvan Road, Woburn, Mass. 01801.

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## Multiprocessor System Unlocks Results of Champagne Marathon

CUPERTINO, Calif. — Runners at this year's Paul Masson Champagne Marathon through California wine-making country were registered and tracked for this race by an on-line multiprocessor system.

A crowd of 2,000 race fans cheered on 2,375 runners from three countries and 37 states in their 26.2-mile route from De Anza Community college here, past the Paul Masson Winery and back to the college.

Frank Richardson, a veterinary student from Ames, Iowa, won the eighth annual

event in record time — two hours, 13 minutes and 54.8 seconds.

The runners' registration forms were processed and data prepared for press briefings by a Tandem Computers, Inc. Nonstop system with two 384K-byte processors, two 128M-byte disk drives, six CRT terminals and a 600 line/min printer.

On race day, the multiprocessor system was moved to the race site to capture final race results and to prepare comparative information for the media on previous race performances and times.



## Documentation: Analyst Offers Practical Tips

By Jeffrey Beeler

CW West Coast Bureau

SAN JOSE, Calif. — Many users do a poor job of documenting their systems, and many others neglect the chore entirely, according to Brian Mullen, a systems analyst and project leader with Information Systems Planning Corp.

Two reasons for the widespread shortage of effective systems documentation are high cost and lack of technical expertise, Mullen said at the Hewlett-Packard Co. (HP) General Systems Users Group meeting here last week.

Most users know how to document a program, but few have mastered the skill of documenting a complete system, Mullen said during a session on boosting DP staff productivity.

Still other users skimp on their system documentation simply because they fail to grasp its full significance. "With most systems in a constant state of flux," DPs often ask themselves, "what purpose is served by documenting them?"

### Practical Tips

Yet, despite common user attitudes to the contrary, the need for organized systems documentation remains as acute as ever, Mullen said. During a brief presentation at last week's meeting, the systems analyst offered HP users some practical tips on how their documentation might be improved.

First, he said, systems documentation should be modular to allow users to take it apart and put it back together again in any form they desire. It should also provide effective naming conventions for files, jobs, programs and any other systems items.

In particular, Mullen urged, users should adopt an "A-Z workbook," an organizing technique he claims to have applied successfully to his own company's documentation needs.

Basically, an A-Z workbook consists of an ordinary, three-ring binder divided into 26 sections, one for each letter of the alphabet. As each piece of documentation is generated, it should be placed in the appropriate alphabetical section and listed in an index in the front of the workbook, Mullen advised.

Together, the index and the alphabetical workbook divisions should ensure users quick and easy access even to pieces of documentation they have never retrieved before, the systems analyst added.

As a general rule of thumb, Mullen said, users can expect to generate about a foot of documentation for every \$25,000 worth of software.

In other advice during the session, Mullen urged his listeners to date each bit of documentation as soon as they produce and file it. Like systems themselves, documentation is constantly evolving and degenerates slowly with time.

But by dating all their documentation at the outset, users can tell at a glance whether a given piece is still relevant or has outlived its usefulness, Mullen said. Without a dating system, users have no way of assessing the currency of their documentation and run the risk of relying on antiquated data.

## Univac Raises Lease, Rental Prices 5%; Maintenance Jumps 9% to 10%

BLUE BELL, Pa. — Joining its mainframe competitors, Univac last week boosted prices for certain products 5% on rental and lease and generally 9% to 10% on maintenance. Those price hikes are effective May 1.

Purchase prices on all products, however, remain unchanged.

Across-the-board rental hikes of 5% were made on all products except the 1100/80, 1100/60 and 90/80 mainframes, the UDS 2000 key-to-diskette subsystem and all terminal and communications equipment.

Lease rate increases of 5% apply to a select group of peripherals, in-

cluding the 8470 disk subsystem, the Uniservo 2X and 3X and 10 tape subsystems.

In addition, lease prices on six printer subsystems — the 0770, 0776, 0777, 0778, 0781 and 0784 — were increased.

Moreover, the rental prices for the BC/7 family of small business systems were hiked 5%, but lease and purchase prices remained unchanged.

Monthly maintenance charges were increased 9% for all products except the 1100/60 mainframe. Hourly rates for on-call maintenance were boosted 15% to 36%, depending on the time of day.

In addition, the company raised monthly charges by 10% for selected program products excluding application programs and 10% for executive operating system support.

The firm also hiked educational courses and services provided by systems analysts 10%.

Although Univac's new pricing scheme was expected after IBM set the price hike wave rolling at the end of last year [CW, Jan. 14], it does not appear as radical as IBM's.

In addition to inflation, a spokesman noted the "tightness of the competitive situation for particular products" also influenced the decision to make the hikes.

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# Need to Boost Productivity

## IBMer Sees Challenges Ahead in VLSI Industry

By Molly Upton

Special to CW

SAN FRANCISCO — Manufacturers of very large-scale integrated (VLSI) circuits must streamline the design and manufacturing cycle and improve productivity or the best days of the industry may be past, keynote speaker Erich Bloch of IBM said last week.

Speaking at the annual conference of the Institute of Electrical and Electronics Engineers' Computer Society (Compcon), Bloch said these improvements will require sig-

nificant investment in engineering and manufacturing tools.

liable and understandable to the nonprofessional, he said. With the trend to increased

costs and therefore no end to new functions and applications for semiconductors and

IBM uses its master-slice approach to give quick turnaround on parts; it makes 100 times as many semiconductor parts as it did five years ago. Wafers with a variety of components are processed and put in inventory. Later, different chip part numbers are derived.

The question of how to supply more I/O as the number of circuits increases can probably be answered by using the total chip area for I/O, not just the periphery, Bloch suggested.

IBM automates its production line and also uses the electron-beam, which eliminates the need to generate masks.

In packaging, one can lose some of the advantages of VLSI by continuing to package one chip to a module; IBM puts as many as nine chips on a ceramic substrate, thus reducing wiring and the need for power while retaining speed.

As the integration level of technology increases, the number of circuits that can be accommodated on a substrate also increases, he observed.

Looking to the future, Bloch observed that progress in the semiconductor area directly affects progress in other areas, such as Josephson Junction (JJ) technology, which he termed the only alternative to semiconductors and also a "highly speculative" undertaking.

But JJ, in which components are subjected to liquid helium and its very cold temperatures, happens to be universal in that it applies both to memory and logic, as is the case with semiconductors.

Incidentally, although Bloch sees semiconductor technology eventually running out of steam, he does not think this will happen until long after our lifetimes.

### Honeywell to Host Two-Day Meet On DP Security

PHOENIX — A two-day symposium titled "Top Secrets '80" has been scheduled by Honeywell, Inc. April 15-16 here at the Pointe Resort.

The program is divided into four parts: ethics and rights in the information systems of the 1980s, the future of information security technology, computer crime and directions in information security management.

The registration fee for the symposium is \$480, including luncheons and a conference notebook. Conference and hotel reservations can be made through Barbara DeMarr, Honeywell Marketing Education, P.O. Box 6000, Phoenix, Ariz. 85005.

## CW at Compcon

In 1970 there were 40 design steps for transistors with 2,000 circuit/wafer. Now there are 300 steps for 100,000 circuit/wafer. And the future product improvements must be matched in other areas, especially applications, with a focus on making machines re-

integration, more of the end product is on the chip. As a result, the component supplier is wending his way to supplying the end product, as has been the case with add-on memories and personal computers, Bloch said.

And the reverse is also true, as mainframers become vertically integrated regarding semiconductor production. Close coupling of semiconductors and computer design and manufacturing results in the chance to optimize systems.

Whereas only 20 vendors had semiconductor production capability just five years ago, 40 have semiconductor lines now, he said.

Because the semiconductor industry is becoming so capital-intensive, the 36 independent semiconductor firms in 1976 have dwindled to seven today, he remarked.

### Future Challenges

Among the rosy aspects in the VLSI future: some see the semiconductors in 1980 as an \$80 billion industry, with no end to the level of integration, the lowering of computing

computers, Bloch said.

To tackle the problems of VLSI implementation, the manufacturing process should be integrated to the point where it is driven by the design system, several other speakers agreed.

In addition, because VLSI is not simply a scaling of large-scale integrated circuits, designers should recognize they face new challenges and turn to a more integrated systems approach in designing circuits, drawing on techniques used for software systems design, Don Scharfetter of Xerox Corp. agreed.

Bloch, vice-president of the Data Systems Division and general manager of IBM's East Fishkill, N.Y., facility, observed that the disciplines pertaining to material, device, architecture and systems are blending.

### IBM Approach

Because of the complexity of the new chips, manufacturers cannot expect to live off inventory, as is now the case, he said, and itemized some of the ways IBM is dealing with VLSI "challenges."

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# Compromise Struck in Struggle Over Sparcs

By Ann Dooley  
CW Staff

ALBANY, N.Y. — A federally funded state medical and financial information system lauded for its privacy safeguards recently aroused federal ire because of those strict regulations.

When the federal government discovered that even it had to submit to the privacy rules, it objected — at one point even threatening to cut off funding for the pilot project — unless it was exempted from the normal review procedures for gaining confidential patient information.

Even though state authorities said the system was so worthwhile that the state would be willing to bear its cost alone, a compromise was reached —

with both sides claiming victory.

The system at the heart of the dispute is the Statewide Planning and Research Cooperative System (Sparcs), announced in 1978. The system acts as a centralized management information system to cut costs and provide fiscal and medical planning data.

Sparcs allows data to be accessed from one source instead of several. Hospital costs can be examined, reimbursements set, resources allocated and illness and death patterns identified through the system.

Information maintained in the system includes the dates of patient admission and discharge, the procedure performed, insurance identification number, the patient's address and birth date and the treating hospital.

The system aroused controversy from the time it was announced. Privacy groups contended that the medical system would invade patients' privacy and encourage potential information abuse; while New York hospitals were concerned that the system would leave them open to lawsuits.

After nearly a year of debate and compromise, it was decided that the name of both patient and attending physician would be deleted and a number assigned to protect privacy [CW, Oct. 1].

## Review Board Set Up

A review board was set up to screen requests for confidential information. Comprised of members from the general public as well as from medical and

governmental groups, the Data Protection Review Board was empowered to act on data requests from all government agencies, individuals and organizations and ascertain whether requests are justified.

Shortly after the system was implemented last November, the Federal Health Care Financing Administration, part of the Department of Health Education and Welfare (HEW) objected to the review procedure, contending the board could delay or even block information needed by the federal government. Although most of the information in question related to Medicaid and Medicare records — data to which the government already had access — a federal government spokesman expressed strong opposition to the rules because the review procedure "could preclude our access to the data necessary to manage the federal programs."

However, he could not come up with an example of any circumstance in which Albany might deny the federal government information.

HEW was also concerned about precedent, noting that if New York set up its own requirements for information retrieval, all other states could set up their own, different requirements.

## Compromise Struck

As a result of recent hearings, a compromise was reached: the Data Protection Review Board would still scrutinize a federal request for information, but if the data was guaranteed to the government under federal statutes, the information would be automatically granted. Federal statutes have precedence over any state law, it was noted.

Any data request outside of the government's jurisdiction would still undergo the normal review process.

Although many observers felt the compromise was one of semantics rather than change, both parties involved seemed satisfied with the agreement. The Health Care Financing Administration has funded the project for \$3.5 million through 1980.

The federal government appears to have learned its lesson from the New York State dispute. In similar systems currently planned in five other states, the government is reportedly requiring that the patient names be kept with the data and that it have "unfettered" access to information before grants are dispensed.

## ACLU Still Unhappy

Although most participants are pleased with the outcome of the Sparcs controversy, the New York office of the American Civil Liberties Union (ACLU) is still maintaining its dissent against Sparcs and similar information reporting systems, contending that the privacy regulations are not binding and could be changed or amended at any time.

"You can't protect patient privacy against future abuse," ACLU spokeswoman Sarah Birn remarked.

Although data requesters must assure the review board they will not try to identify an individual patient, the federal government might use the data for fraud matching, as was done with Social Security numbers and Internal Revenue Service data checked against the Parent Locator Systems and Project Match, Birn claimed.

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# Tariff for Dataphone II Delayed Until March 28

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — Dataphone II, AT&T's proposed network troubleshooting service, was not tariffed on Feb. 29 as planned. Last week, in the wake of a mounting controversy between the telephone company and independent modem manufacturers, the effective date was changed to March 28.

The modem makers represented by their trade group — the Independent Data Communications Manufacturers Association (IDCMA) — contend that they are losing business because of the way AT&T is promoting Dataphone II service [CW, Feb. 18].

Marketing has been under way since early in 1979, according to the IDCMA, and last January the telephone company announced that first shipments of Dataphone II hardware would be delayed. These sales activities, coupled with the delivery delays, are "concrete evidence of premarketing," the association said in a petition to the Federal Communications Commission (FCC).

Independent modem manufacturers that offer competing systems will suffer a loss of business, IDCMA argued, because potential customers will delay their purchases in order to compare them with Dataphone II when it becomes available. IDCMA's key argument is that the Communications Act of 1934 requires a carrier to have a service available when the related tariff becomes effective.

## Phone Company Replies

AT&T disagrees. The effective date "has nothing whatsoever to do with ... processing orders ... establishing delivery dates or actually installing the specified equipment," AT&T said in a Feb. 19 response to IDCMA's complaint.

If the FCC accepts IDCMA's reasoning on this point, the phone company added, the result will be to give non-carrier suppliers "an unreasonable competitive advantage."

The phone company explained that "regulated carriers must have an effective tariff before furnishing any service to customers; if they also had to have the capability of providing large quantities of such equipment on the same date the tariff becomes effective, it would be impossible ... to incorporate the experience gained from a phased product introduction so that large numbers of customers would benefit from this experience. Also, this would likely increase development and manufacturing costs associated with these products."

Nonregulated suppliers, AT&T added, are free to undertake phased introductions of their equipment. "Thus, regulated carriers would be handicapped with no resulting public interest benefit — merely a benefit to the nonregulated suppliers."

## Slippage Masked

According to IDCMA, AT&T's January announcement that initial shipments of Dataphone II hardware would be delayed one to four months masks a much greater slippage. This is because of a more gradual production

buildup following the initial shipments. IDCMA said that under the revised schedule, quantity shipments of some Dataphone II components in 1980 would be reduced 69% to 85%.

AT&T partly confirmed this prediction in its response to the association's charges. The telephone company admitted that 1980 shipments of three of the four modems included in the Dataphone II offering (the 2048A, 2048C and 2096A) will be reduced drastically compared with original projections.

In the case of the 2048A and C, only 900 are now scheduled to be shipped this year vs. an original target of 3,640. The company also had planned to ship 2,970 Model 2096As, but under the revised schedule this has been reduced to 445.

By the end of 1981, however, deliveries are supposed to be almost equal to the original-projected levels. As a result, "there is no merit to IDCMA's allegations that AT&T's tariff filings and sales activities constitute evidence of 'premarketing,'" the company told the FCC.

IDCMA, in its earlier complaint, reported that AT&T also planned a 69% reduction in shipments of Dataphone II network controllers and diagnostic consoles. The original plan called for the production of 190 consoles and 33 controllers this year; under the revised schedule, however, only 58 of the former and 10 of the latter are to be shipped.

In its response to IDCMA's charges, AT&T said nothing about either of these components.

## Reason for Delay

There is also some disagreement about the reason for the delay. Although AT&T has attributed the problem to "mere technical problems," IDCMA pointed out, the phone company has "admitted that these problems extend to both hardware and software."

According to AT&T, however, "no basic or fundamental hardware or software problems have been encountered." Rather, the company found late last year "that the complexity of the system had been underestimated."

The delayed deliveries have been caused by a need to "observe the technical and operational performance" of Dataphone II hardware "in a variety of customer applications" and to incorporate "this experience in the product so that a large number of anticipated customers will benefit."



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# CCIA: Let Commercial Vendors Carry Mail

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — Letting commercial firms carry the mail electronically will bring the service to the market quicker than by allowing the U.S. Postal Service to become a communications carrier, according to A.G.W. "Jack" Biddle, president of the Computer & Communications Industry Association. Biddle also contended that this approach would make the benefits of the technology available to many more users.

Biddle testified at a hearing conducted by a House Post Office subcommittee on Electronic Computer-Originated Mail (Ecom), the Postal Service's proposed on-line mail distribution and delivery service designed

for department stores, utilities and other organizations that regularly send out large quantities of letter mail.

The service would enable these firms to transmit letters in binary form to "serving post offices" (SPO) in each of the nation's 25 largest cities. The SPO would convert each message to hard copy and then deliver it by mail carrier no more than two days after receipt.

The Postal Service wants to perform this entire service, directly or by contract (see story on Page 19). Commercial vendors of electronic message services (EMS) want to provide the transmission without being subject to Postal Service control. So far the latter position has been endorsed by the Carter Administration and by the Postal Rate Commission, a Postal Service advisory body.

visory body.

One result of allowing commercial vendors to offer electronic mail services "in partnership" with the Postal Service, Biddle told the House subcommittee, is that it will encourage the installation of terminals designed for use by the general public. Specifically, he mentioned coin-operated transmission devices located in post offices, drug stores, supermarkets and other convenient locations.

"As communicating word processors spread throughout the business community, virtually every small and medium-sized business in America would have an opportunity to speed up the transmission and ultimate delivery of its mail," Biddle said. By contrast, Ecom "would, of necessity be ac-

cessible only to large commercial mailers."

He also contended that "the public policy issues involved in any [Postal Service] transmission effort are sufficiently complex to make it highly probable that any meaningful implementation would be delayed by litigation and congressional review for two or more years" — an apparent reference to last summer's decision by the Federal Communications Commission requiring the Postal Service to obtain a common carrier's license before it can offer Ecom [CW, Aug. 6].

Moreover, key members of Congress have said they do not want the Postal Service in the electronic mail transmission business.

The Postal Service has argued that if commercial firms are allowed to provide electronic mail services, much of the existing postal work force will be put out of work. In addition, present postal patrons will migrate to the new services, reducing postal revenues and forcing it to drastically curtail its present mail services.

Biddle said that the commercial vendors want only to provide transmission services, not delivery, and thus the impact on Postal Service employment will be minimal.

Underlying the whole debate over EMS is the industry's fear of a Postal Service takeover. As Biddle put it:

"The private sector is . . . deeply concerned that the [Postal Service] would choose to invoke the Private Express Statute to eliminate private sector competition once it had begun to offer EMS services."

"Since the Postal Service interprets, adjudicates and enforces the Private Express Statute, it [can enforce the statute] in a way that would allow [monopolization of] all electronic message services or, at the very least, [extraction of] a fee from those who transmit messages outside of the [Postal Service] network."

## Call for Papers

FOURTEENTH ANNUAL SIMULATION SYMPOSIUM, Tampa, Fla., March 17-20, 1981.

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Authors are asked to submit by May 9, 1980 a working title for the paper, a proposal (minimum of 750 words) describing the contents and range of the paper, a statement that the author will personally present the paper and the author's name, address, title and position to Ron Huhn, P.O. Box 1953, Melbourne, Fla. 32901.

FOURTH ANNUAL SYMPOSIUM ON COMPUTER APPLICATIONS IN MEDICAL CARE, Washington, D.C., Nov. 2-5.

The symposium is designed to inform physicians, health care administrators, biomedical scientists, engineers and other health care professionals about current and potential applications of computer technology in their respective field. Papers are solicited on relevant topics.

Authors should submit by May 1 three copies of a one-page abstract that clearly defines the purposes and relevance of their work for medical care to Joseph T. O'Neill, National Center for Health Services Research, Center Building, Room 8-30 No. 1, 3700 East-West Highway, Hyattsville, Md. 20782. Authors should indicate their preferred method of presentation (if any) of either a 20-minute oral presentation or a poster display and/or demonstration.

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## Wants to Offer Transmission

# USPS Rejects Recommendations Limiting Ecom

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — The U.S. Postal Service's (USPS) board of governors has rejected a Postal Rate Commission recommendation that the USPS not offer transmission as part of its proposed Electronic Computer-Originated Mail (Ecom) offering.

The post office should be allowed, "on the basis of demonstrated need, to contract for the services of telecommunications carriers, so long as the principle of free and open competition is adhered to," the governors said in a Feb. 22 reply to the commission's conclusions on Ecom [CW, Dec. 24].

Ecom is designed to provide mass mailers with a means of transmitting customer statements and similar money-related documents on-line from their premises to serving post offices (SPO) in the nation's 25 largest cities. The USPS wants to provide an end-to-end service, including transmission; commercial vendors of electronic message systems (EMS) want to provide the transmission exclusively, independent of Postal Service control.

Last December, the Postal Rate Commission, an advisory group to the governors of the Postal Service, agreed that the USPS should not offer transmission as part of its initial Ecom offering.

### Other Suggestions

Besides, rejecting this part of the commission's recommendation, the governors had several other suggestions. Specifically, they want mailers to have the option of bringing their Ecom messages in magnetic tape form to each SPO for input at that point. The aim is to "obviate the need for some mailers to purchase data communications services they might not require." In addition, the governors suggested that:

- Large mailers with their own transmission networks be allowed to interface these facilities with each SPO.
- A "service commitment" be obtained from each participating commercial carrier by the Postal Service. This commitment would obligate the carrier to provide "service of determined quality and scope for a minimum period of time."
- Ecom be started on a permanent basis (the Postal Rate Commission recommended an experimental offering initially).

## Communications Meet To Focus on Business

SAN FRANCISCO — A three day seminar on "Business Communications in the '80s" will be held here and in New York to acquaint users and suppliers with the systems and services that will be available in the next few years.

The conferences will feature new applications of telecommunications such as electronic mail and teleconferencing, according to the *Business Communications Review*, which is conducting the meetings.

The conferences will be held on April 9-11 in San Francisco and June 17-19 in New York. Further information is available from the magazine at 36 S. Washington St., Hinsdale, Ill. 60521.

Industry reaction to the USPS governors' decision was generally negative.

Jack Biddle, president of the Computer & Communications Industry Association (CCIA), expressed concern about the service guarantee. He thought it would bar entry into the EMS market by commercial firms, which he endorsed in recent House hearings (see story on Page 18).

Stan Weinstein, an attorney for Graphnet, Inc., which led the industry battle against the original Postal Service Ecom plan, said he was glad the governors have agreed with the Postal Rate Commission that the service should be offered on a competitive basis. However, he questioned most of the governors' suggested changes — particularly the one allowing USPS to contract with commercial communications carriers.

"This idea seems to be in direct conflict with the [rate commission's] recommendation," he explained.

## New York to Host Small Computer Show

NEW YORK — The Fourth Annual National Small Computer Show will be held Oct. 30-Nov. 1 in the New York Coliseum here.

Based on a format of hourly lectures on current topics in DP and word processing, the show will also display computers ranging in worth from \$500 to \$150,000.

Expected to consist of 30 50-minute presentations, the lecture series will cover such topics as uses of Pascal in business applications, process control, educational applications in the home and word processing in law offices.

The registration fee for the three-day show is \$10/day/person, with a 20% discount for groups of 10 or more from the same organization. The National Small Computer Show is located at 110 Charlotte Place, Englewood Cliffs, N.J. 07632.

Stephen Sharfman, who represents the public in rate commission proceedings and whose office played a key role in developing the recommendation approved by the commission last December, said, "I don't think I would go along with a permanent offering."

He also questioned whether the USPS should be allowed to transmit Ecom messages, referring to a Federal Communications Commission decision last summer which said the Postal Service would have to become a common carrier before it could perform this function. (The USPS has taken this ruling to court, where it is still pending.)

According to a Postal Rate Commission spokesman, the commission now plans to solicit comments from interested parties — a process likely to take several days — before issuing its reconsidered decision. The commission is free to accept all, some or none of the governors' suggestions.

The reconsidered decision, when it goes back to the USPS, can be accepted, accepted under protest or modified. But the governors' power to make changes is limited by statute.

If the reconsidered recommendation is accepted under protest, he added, the governors can go to court and seek modifications.

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## To Restructure Federal DP Policy

# OMB and GSA Endorse 1980 Brooks Bill

By Jake Kirchner

CW Washington Bureau  
WASHINGTON, D.C. — Government DP officials have lined up in support of legislative proposals that would restructure federal information policymaking.

Appearing before the House of Representatives Legislation and National Security Subcommittee here recently, high-

level executives of the Office of Management and Budget (OMB) and the General Services Administration (GSA) testified in support of the Paperwork Reduction Act of 1980, introduced by Rep. Jack Brooks (D-Texas) last month [CW, Feb. 18].

OMB has exhausted its policymaking powers under current federal statutes and needs

additional powers, which would be granted under the bill, to obtain further economies in federal DP, according to Wayne G. Granquist, associate OMB director for management and regulatory policy.

Granquist told the subcommittee, chaired by Brooks, that OMB "strongly supports" the legislation.

Similarly, Frank J. Carr, commissioner of GSA's Automated Data and Telecommunications Service, said "the bill contains remedies for some long-standing problems in federal management policies relating to automated data processing equipment, telecommunications, records management and related technologies."

H.R. 6410, introduced Feb. 5, calls for a central Office of Federal Information Policy within OMB that would be responsible for all government information direction.

Other provisions specify methods for reducing the public's government paperwork burden and detail agency practices for more efficient acquisition and use of data processing resources [CW, Feb. 18].

Granquist, whose office would inherit the bulk of the new powers called for in the bill, told the House subcommittee that "without the consolidation of federal information policy responsibilities in a single organization [as called for in the bill], we will continue the disjointed and fragmented approach of the past."

Granquist testified that "we have used all the tools at our disposal to reduce the federal reporting burden and improve the management of federal information. It is now up to the Congress to replenish our arsenal and provide us with additional tools for tackling these important problems."

The Brooks bill, he said, "will accomplish that objective."

### Fine Tuning

Although praising the legislation on the whole, Granquist did say it needed fine tuning to specify how policy-making responsibilities would be spread throughout the agencies and urged that Congress not usurp in OMB's behalf the various information oversight activities of GSA, the Department of Commerce and the Defense Department.

GSA's Carr also offered a "few technical suggestions" for the subcommittee's consideration, but enthusiastically welcomed the primary objectives of the legislation.

"H.R. 6410 will lead to the integration of many divergent and competing interest groups under comprehensive federal policies," he said, referring to DPs, communications specialists, word processors and office managers, among others.

Although the various "branches of information pro-

(Continued on Page 23)

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# Federal Information Locator System Proposed

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — A distributed DP system that could save American taxpayers as much as \$100 million a year has been proposed for the federal government.

The Federal Information Locator System (Fils) — a governmentwide system of data bases linked by telecommunications lines — theoretically could save that much by promoting interagency information sharing to reduce the public's government paperwork burden, now estimated at \$100 billion annually.

The idea behind Fils is that much of the information sought from the public by federal agencies each year is already held by other agencies and departments. By making it easier to find that information in government files, agencies will not be asking citizens for as much information. This in turn should save the public time and money both up front and in taxes because agency operations would be more efficient.

The Fils concept, a major recommendation of the Commission on Federal Paperwork, has been under active study for several years. Information locator systems are already in internal use in numerous federal agencies, most notably the Defense Department.

In that department, the Information Requirements Control Automated System (Ircas) produced estimated cost savings of \$1.8 million during its first two years of operation.

## Mandatory Use

Fils, however, in addition to being governmentwide, would be mandatory for all agencies. Currently, the use of locator systems such as Ircas — which has 10 users — is voluntary.

President Carter ordered development of the mandatory system in an Executive order last November. Several pieces of legislation now pending before Congress, including the Paperwork Reduction Act of 1980, also call for this type of system (see story on Page 20).

Following the Paperwork Commission's recommendation, a Fils task force was established in late 1978 under the Office of Management and Budget (OMB). The group studied dozens of existing government and private-sector locator systems before recommending, in a report now circulating throughout the government for comment, that a distributed system be built from the ground up.

## Three-Level System

As envisioned by the task force, Fils would contain two-page descriptive profiles of each of the 5,000 to 10,000 different reports the government obtains from the public or produces for internal use.

A three-level system, Fils would maintain data bases at central level by OMB and the General Accounting Office (GAO) — the agencies responsible for federal paperwork regulation — and at the departmental and bureau (subdepartmental) levels.

The central file would contain an "information resources directory" and a data element dictionary. Eventually, an information referral service would "automatically switch on-line inquiries from the Fils to another data

base or information system," the task force explained.

The switching would take place only if the Privacy Act and the Freedom of Information Act did not prohibit the information sharing required.

Agencies would access the system through data terminals by means of dial-up telephone lines. The system would interface with the various information locator systems already in use at the agency level. Both interactive and batch processing would be possible.

Because it would be a modular system, the distributed Fils would be easier to build, facilitate access control and make it easier to determine a fee structure for agency users, the task force noted. Responsibility for updat-

ing the information in the system would also be spread more equitably throughout the federal bureaucracy.

## The Next Step

The task force report is basically a concept report. The next step, the report said, is to draw up a blueprint for the system. The task force will soon solicit public comments on its proposal, after which a permanent interagency group to develop Fils should be established.

The system is expected to cost approximately \$3 million to design, test and debug. This figure does not include costs that agencies would incur in developing their individual components of the system.

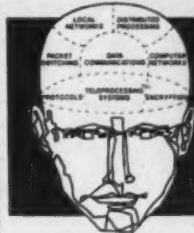
Fils data bases should not be open to

public access for several years to allow assurance of data accuracy so that public confidence in the system will not be jeopardized, the report said.

The task force suggested that "public users of Fils will come primarily for its utility as a finding and research aid, to help citizens, businesses, state and local governments, institutions such as hospitals and colleges, and others find information they may need."

But the big benefit seen for the public would be in the dollars saved each year as the task of filling out government forms and reports is reduced. Even a "modest" 5% reduction in the 786 million hours now spent annually in that activity would make Fils development expenses "seem like a very reasonable cost," the task force said.

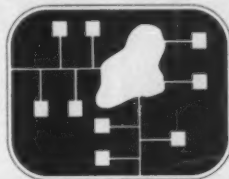
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- the critical interactions of resource management, inter-process communication, communication protocols, and interconnection hardware
- a systematic approach to design and analysis: characterization of the solution space
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## Managers on the Move

DONALD B. CANFIELD has been appointed manager of administrative services. DAVID A. EVERITT JR. has been named manager of technical services and WILLIAM P. McDONALD has been appointed manager of information resources at Bethlehem Steel Corp. in Bethlehem, Pa.

Canfield joined Bethlehem Steel in 1942. He advanced through several positions and was named DP manager in 1969. He was promoted to manager of DP services in 1972, a position he held until his current appointment.

Canfield holds a B.S. in mathematics from Moravian College.

Everitt joined the corporation in 1961 in the Billing Division of the Accounting Department. After advancing through several Billing Division positions, he was named computer systems engineer in 1967.

Everitt was promoted to manager of technology and equipment evaluation for cor-



William P. McDonald

porate data processing in 1969. In 1974, he was named manager of technology, the position he held until his most recent appointment.

Everitt has a B.S. in mathematics from Muhlenberg College.

McDonald joined Bethlehem Steel in 1956. He has been promoted to several positions including supervisor of sys-



David A. Everitt Jr.

tems and planning in the Corporate Data Processing Division of the Accounting Department. He was appointed data base administrator for corporate data processing in 1974, the position he held until his new assignment.

JOHN S. ORR has been named corporate manager of systems development for Whittaker Corp. in Los Angeles.

Orr will be responsible for reviewing and coordinating the DP activities of the various Whittaker divisions.

Orr most recently served as national field technical support manager of Computer Sciences Corp.'s Infonet Division in Los Angeles.

He holds a bachelor's degree in business administration from Temple University in Philadelphia.

RICHARD C. THOMPSON has been named president of Data Entry Services of America, Inc. (Desa) in Plymouth Meeting, Pa.

Formerly executive vice-president and chief operating officer at Scan-Data Corp., Thompson will be responsible for coordinating the Desa data centers' efforts and for developing and implementing marketing programs throughout the U.S.

In addition to Scan-Data Corp., Thompson has also been employed by Control Data Corp.

DOUG OATES has been named data center director for GTE Data Services' Camillus, N.Y., division and RICHARD B. BRELSFORD has been appointed western regional network director for GTE Data



Donald B. Canfield

Services in Everett, Wash.

In his new position, Oates is responsible for computer operations, data control, systems support, data entry and administrative functions at the Camillus data center. He has been with GTE since 1965 in various capacities, most recently as operations staff manager.

Brelsford will be responsible for all network facilities in the western region, including data centers in Everett, Wash., and Los Angeles.

Prior to joining GTE in 1969, Brelsford was associated with Corning Glass Works and Martin-Marietta, where he held supervisory and administrative positions in personnel, industrial relations and DP. He was most recently director of management information systems at GTE.

Brelsford holds a B.S. in industrial education and an M.B.A. from Michigan State University.

SAMUEL J. DRESSLER, until recently director of information systems, has been promoted to assistant vice-president by Commercial Union Leasing Corp. in New York.

Prior to joining Commercial Union, he held systems management and analyst positions with Citibank, STC Systems, Univac and Burroughs Corp.

He holds a B.S. in mathematics from the City College of City University of New York and an M.S. in computer systems science from New York University.

MICHAEL DOBEY has been named DP director at Eason Oil Co. in Oklahoma City, Okla.

Dobey went to Eason Oil Co. from Grace Petroleum Corp., where he was manager of technical services.

Dobey received his bachelor's degree in management science from Oklahoma State University.

EDWARD C. BENDER has been appointed vice-president of DP at W.W. Grainger, Inc. in Skokie, Ill.

Bender, who joined the company in 1959, has served in various capacities primarily in the DP area and most recently was corporate director of DP.

In his new position, Bender will have overall responsibility for DP operations throughout the company.

ANTON BURKHARTSMEIER, DP manager for Midland Federal Savings in Denver, has been elected vice-president of the association.

Burkhartsmeier joined Midland in 1978 to head the association's DP Division. He was appointed a senior assistant vice-president in March 1979.

Prior to joining Midland, he was associated 21 years with the First National Bank of St. Louis, where he was vice-president and manager of DP, check collection and affiliate operations.

Burkhartsmeier received a degree in business at Washington University in St. Louis.

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## 'Nothing Short of a Right'

# Geller Lobbies for Credit Information Privacy

By Jake Kirchner

CW Washington Bureau  
WASHINGTON, D.C. — One of President Carter's top advisers on technology went to Capitol Hill recently to lobby for an Administration bill to strengthen privacy protections for the public in its dealings with credit agencies, major users of advanced DP and telecommunications.

The Fair Financial Information Practices Act would provide "critical protection for personal information handled by consumer reporting and consumer credit industries," according to Henry Geller, assistant secretary of Commerce for communications and information.

Appearing before the Senate Banking Subcommittee on Consumer Affairs Feb. 2, Geller said the bill, one of several introduced as part of Carter's "privacy initiative," would advance the cause of ensuring

"the integrity of recorded information."

In our increasingly information-dependent society, that integrity is "a thing of value" and "must be nothing short of a right," Geller said.

The legislation would, among other things, assure consumers access to their credit records and enhance their ability to correct inaccurate or incomplete information about them. It would also limit methods for gathering credit data and force credit grantors to inform consumers of their information collection and disclosure practices.

### Consumer Alienation

When the bill was proposed in October, then Commerce Secretary Juanita Kreps warned of an "Orwellian nightmare" of excesses posed by the electronic age [CW, Oct. 15].

Geller's statement before the

Senate panel, while more prosaic, was no less enthusiastic in support of the bill.

Discussing credit transactions in the age of computerization, Geller described the dizzying proliferation of automated nationwide credit reporting systems which alienate consumers from the data on which are based so many important financial decisions about them.

"Personal interaction has declined, supplanted by recorded information as the primary factor in establishing and maintaining the credit relationship," Geller noted.

This reliance on recorded information, "facilitated by advances in computer technology," means decreased consumer contact with the "information about him or her on which the credit relationship is based."

Accompanying this trend is

an increased potential for undetected error. Existing laws, such as the Fair Credit Reporting Act, cannot cope with the accelerated flows of credit information, Geller argued.

### Unlimited Disclosure

Credit bureaus, interlocked through nationwide DP networks, regularly disclose personal financial information to doctors, landlords, employers and government agencies.

"In fact," Geller pointed out, "the Fair Credit Reporting Act allows a credit bureau to give a report to anyone who has a

'legitimate business need' for the report in connection with a transaction involving the consumer."

At present, he continued, "there are practically no limits on how a creditor can disclose information it collects about consumer." This situation would be greatly ameliorated, Geller said, by passage of the Carter legislation.

Growing public concern about possible loss of personal privacy in the information age "presents a clear and compelling mandate for action," he said.

## Via Time-Sharing Service

# Japanese Fortunes Told by DP

TOKYO — The Japanese do not trust just anybody to predict their futures, so they picked a computer to be their fortune-teller.

Their guru is a Univac 1100/21 system owned by Univac Sogo Kenkyujo (SGK), a subsidiary of Nippon Univac Kaisha Ltd., the Sperry Corp. joint computer marketing venture in Japan. SGK supplies a time-sharing computer service to Kit Enterprise Co., which runs the business.

The service is known as Astrocraft, and 55,000 anxious

Japanese flocked to it between April and December of last year for a glimpse of what is yet to come. Marriage-minded women wondering about their future prospects comprised the dominant segment of clients.

The process is a simple one. After paying a \$6 fee, the client fills out a form listing name, birthplace and exact birth date.

The data is then keyed into a terminal and transmitted to the 1100/21, where a synopsis of the fortune prophecies is formulated, returned to the

terminal and printed on a strip of paper, in a matter of seconds.

The idea was concocted by Dr. H. Itokawa, head of the System Engineering Institute, a Japanese "think tank." The system is based on Western astrological principles which are easily adapted to computers because they are based on mathematics.

Y. Iyama, president of Kit Enterprise Co., is so enthused about it that he is considering an expansion program that would bring it first to Hawaii and then the mainland U.S.

# OMB, GSA Back New Brooks Bill

(Continued from Page 20)  
cessing" have obviously been converging over the years," little more than lip service has been paid to the need for consistent, central management or policy direction."

The bill would rectify that, Carr maintained.

Expanding on that theme, Carr said that "frankly ... many agencies resist the notion that office automation, data processing and communications are even related."

H.R. 6410 is "an affirmation of the similarities of these technologies and a direction to manage these tools coherently."

Carr said he welcomed the emphasis in the bill on DP standard, particularly for software. Alluding to the newly established Office of Software Development [CW, Dec. 3], Carr said its effectiveness "would be multiplied many times by the strong endorsement" of its objectives in the legislation.

### Acquisition Policies

Turning to GSA acquisition policies, he said "there are

many agencies that don't like the discipline of ADP regulations or our emphasis upon competition." Carr approved of the bill's requirement that every agency designate a "senior official" accountable for DP and telecommunications procurements.

A particularly "ambitious undertaking" is the bill's provision for OMB and GSA to develop a five-year plan for meeting DP and telecommunications needs of federal agencies — a plan that might more easily be undertaken in the second year of the new OMB information policy office, Carr said.

The legislation calls for this planning activity during the first year of the office's existence, but Carr suggested that organizational matters might so preoccupy OMB initially as to make that suggestion unrealistic.



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# European Bankers Decry Lack of Vendor Insight

By Rex Malik  
Special to CW

LONDON — Computer and communications vendors "are not up to their task in being sufficiently familiar with their clients' business," according to the senior management of 44 major European banks.

That opinion was expressed in a report entitled "Automation of Bank Operations in the Eighties," published following the Second Zurich Conference last November.

The report represents the opinions of the senior representatives of 44 banks in 14 countries. According to a poll answered by 31 of them, the users represent an annual DP expenditure totaling \$710 million — half spent on hardware.

According to the report, these users would prefer to brainstorm with vendor staff members to determine their needs rather than being presented with a plan that represents the vendor's perception of the bankers' needs.

Bankers are also unhappy with existing encryption products and storage devices.

## Data Encryption

"It is recognized that encryption will become more important," the report said. "The present methods do not satisfy. Software-based encryption and decryption has extended processing times fifteenfold where it was tried. It has to be abandoned. The Data Encryption Standard (DES) is used only by British banks. Continental

banks fear that a key-based security is not acceptable."

To make sure there should be no misunderstanding, the report of their working group put it even more strongly. "The usefulness of present-day available software-operated encryption procedures was denied." Individual message-processing times have exceeded acceptable limits, and improvements must be made.

Furthermore, "The security of satellite communications can be accepted by banks only when the encryption problems have been solved."

## Memory and Disk Storage

The banks, too, were not very happy with the current state of archiving technology.

"The well-known gap in the price-performance curve between memory and disk storage is a severe shortcoming for banks whose operations depend on making vast volumes of data available to thousands of workstations," the report stated. "The recommendation is that manufacturers should accelerate development," the report said, adding, "The present technique of underutilizing disks, as far as their storage capacity is concerned, and providing adequate channel capacity is an expensive substitute for an in-between technology."

## Mass Storage Devices

The banks also indicated a need for a new hardware device that would allow users to write an unalterable record. Such a device would need a large volume capacity and should provide reasonable access times, the report said.

Laser technology could be utilized to create a nonmagnetic information storage carrier that could be considered legally acceptable, the report suggested. Magnetic strip bulk storage is another technique that should be exploited.

The report took a swing at existing mass storage devices, saying present implementation cannot be considered to be an extension of disk storage. Such devices are too slow for use in an interactive conversational mode. Further, the backup problem cannot be solved satisfactorily, and data transfer from one unit to another is hardly possible. This means data cannot be stored in duplicate in a synchronized fashion, the report said.

Such criticism will not please IBM since until now banks have been among the main customers for the 3850 mass storage device, at which this criticism is clearly aimed.

The report also cited bankers' unhappiness with communications standards, particularly at the international level. "While everyone present agreed the X.25 standard is a welcome step in the right direction, different interpretations by national communications authorities cause a great deal of anxiety."

Conference attendees decided to organize a representative bankers' group through their national bankers' associations to press for agreed international standards.

The group will meet again in Amsterdam in 1981.

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## Lecture Series Begins in London

# Grosch's Latest Law: Cheap Means Fast

By Rex Malik  
CW Staff

LONDON — "If you want to do it very cheaply, you have got to do it very fast," Dr. Herbert R. J. Grosch said in his latest update of Grosch's law.

The former director of the National Bureau of Standards' Computer Sciences Division was addressing an audience of DP managers here recently at a lecture sponsored by Burroughs Corp.

The lecture was the first in a series Grosch will be presenting in Europe on the growing importance of large computers.

### Large, Not Expensive

Large machines are not always as expensive as people think, because many of the comparisons made in organizations are often poor comparisons.

"If you have a small sys-

tem," he said, "you can do 'creative accounting.' You can expense the hardware as you buy it — a small disk drive here, an extra central micro there. Over the course of the year it is written off.

"Communications? Well, that is in the company phone bill. Power supply? Company overheads again."

None of this is possible with large systems. Costs there have to be attributed. Moreover, if you want to advance your computing interests, you stand more of a chance of doing so with large systems, Grosch said.

You can usually get a better staff and keep it. Large systems almost force organizations to have career paths and opportunities for promotion, he pointed out.

### Limits to Chip Densities

Grosch was at his best in

doubting that chip densities would continue to increase almost indefinitely as some industry observers seem to be predicting.

Though Zilog, Inc. has predicted 100M-bit chips and "some of the wilder Japanese have talked about the billion-bit chip," Grosch expressed doubt that chips would go much beyond 1M bit. He cited three major limitations on great increases in chip density.

First there are the conventional limitations of fabrication. These become more complicated as the artifacts on the substrate get smaller and smaller until the number of atoms across a connector become so small that just plain statistical failure results.

"If you need to have 100 atoms to make a useful connector in a submicrometer structure, there will be connectors that have too few

atoms to actually function," Grosch said.

Second, as elements are packed closer and closer together there is the familiar problem of heat dissipation. Heat dissipation considerations would not necessarily bar the industry from the million-bit chip, but they might make it difficult to move toward the 100 million-bit chip, he said.

In any case, if everything were squeezed together, the waste switching energy could not be dissipated.

### Unpredictable Alphas

A third roadblock likely to arise when mass-producing chips with large levels of intricacy is unpredictable damage from alpha particles.

Many materials used to create the CPU and memory have a natural radioactivity and contain elements that occasionally emit a radioactive particle.

"One of those particles," he said, "striking the ultra-fine structure of a million-bit chip is likely to knock out not just one connector or gate, but several connectors." Because of the random nature of the event, the chances of predicting it are remote.

One industry representative attending the lecture supported Grosch's remarks about alpha particles, saying such problems have already occurred in the manufacture of bubble memory.

## Leaves Method Open Fla. Study Urges Instructional DP

By Jay Woodruff  
CW Staff

TALLAHASSEE, Fla. — The State Department of Education here released a report that urges the state invest immediately in instructional computing, but leaves open the avenues through which this might be accomplished.

The report was submitted to Florida Commissioner of Education Ralph D. Turlington, who will present it this month to an initial session of the state legislature.

The report — assembled by

the Department of Education Commissioner's Advisory Committee on Instructional Computing — further suggests that in addition to enacting legislation that will encourage instructional computing, the state should assign a larger staff to provide information, consultation and technical assistance.

That staff could be from the Florida Educational Computing Project (FECP) — which has provided computing assistance for the past few years under the Department of Education [CW, July 23] — or some similar group dedicated to educational computing, according to Dr. Peggy Roblyer, research associate at FECP.

### Long Way to Go

The report makes it clear that the state has a long way to go before deciding on hardware, software and methods by which instructional computing might be accomplished.

There is, for example, the question of what means — stand-alone microcomputers or centralized terminal networks — should be employed to provide instructional computing.

Florida currently employs three large time-sharing systems with a total of approximately 600 terminals. One is a Control Data Corp. computer-aided instructional (CAI) system called Plato, used for remedial mathematics [CW, Dec. 10]. Plato's size has made it the subject of some controversy.

The state also has an installed base of 250 microcom-

puters, as well as some larger systems, and some share computing facilities.

In terms of cost alone, micros such as the Radio Shack Corp. TRS-80 II and the Apple Computers, Inc. Apple II-32 cost little more than one-tenth as much to operate as the time sharing systems currently in place in the state, the committee advisory found.

Micros do not offer the advantages of centralized and standardized distribution offered by such instructional systems as Plato. The report suggests, however, that micros would be less expensive than enlarging the state's instructional computing system through the use of a centralized network.

### CAI Priorities

The committee's report specified priorities the state should follow to facilitate instructional computing, including:

- Diagnostic techniques and instruction for basic skills. Remedial and compensatory programs should be improved and at the same time, students and educators alike need to develop "minimum computer literacy."
- Development in vocational and other professional fields where computer skills will "add to the economic development throughout the state."
- Computer use in problem-solving.
- Specialized applications for handicapped students.
- Computer technology in those curriculum areas where there is low student enrollment.

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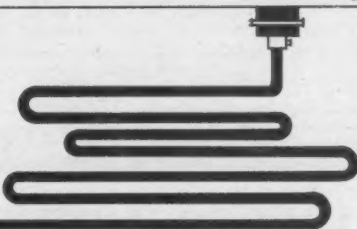
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## Calendar

March 31-April 3, Washington, D.C. — **International Operational Data Security Workshop.** Contact: Data Security Workshops, Inc., 6 Swarthmore Lane, Dix Hills, N.Y. 11746.

April 1, New York — **How To Prepare and Deliver Effective Presentations.** Contact: The Dartnell Institute of Management, 4652 Ravenswood Ave., Chicago, Ill. 60640. Also being held April 2 in Philadelphia and April 3 in Cleveland.

April 1-2, Raleigh, N.C. — **User's Role in Systems Development.** Contact: Q.E.D. Information Sciences, Inc., 141 Linden St., P.O. Box 181, Wellesley, Mass. 02181. Also being held April 2-3 in Teaneck, N.J. and April 15-16 in Wellesley, Mass.

April 1-3, Wellesley, Mass.

— **Distributed Computing Systems.** Contact: Q.E.D. Information Sciences, Inc., 141 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

April 2-3, Washington, D.C. — **Hearings and Workshop on Information Technology in Education.** Contact: Technology in Education Workshop, 2321 Rayburn House Office Building, Washington, D.C. 20515.

April 2-4, New York — **Electronic Mail: An Overview of Concepts, Systems and Applications.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 16-18 in Los Angeles.

April 2-4, San Francisco — **Practical Approaches for Improving Systems and Organizational Productivity.** Contact: Datapro Research Corp.,

1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 23-25 in Los Angeles.

April 2-4, Chicago — **Automating Your Office Today: Planning and Implementation.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 16-18 in San Francisco.

April 2-4, Dallas — **Systems Analysis and Design: Concepts and Effective Practice.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 9-11 in Washington, D.C., and April 30-May 2 in San Francisco.

April 2-4, Phoenix — **Campus Security.** Contact: Theorem Institute, 1782 Technology Drive, San Jose, Calif. 95110. Also being held April 14-15 in San Jose.

April 7-8, Boston — **Software Cost Estimating.** Contact: American Institute of Aeronautics & Astronautics, Department SCE, P.O. Box 91295, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

April 7-9, Denver — **Word Processing: Effective Operations Management.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 14-16 in Chicago and April 21-23 in Atlanta.

April 7-9, San Francisco — **Distributed Computer Architecture.** Contact: Technology Transfer Institute, P.O. Box 49765, Los Angeles, Calif. 90049.

April 7-9, New York — **Electro/81 Show and Convention.** Contact: Electronic Conventions, Inc., 999 N. Sepulveda Blvd., El Segundo, Calif. 90245.

April 7-9, Atlanta — **Introduction to Teleprocessing Software.** Contact: Datapro Research Corp., 1805 Under-

wood Blvd., Delran, N.J. 08075. Also being held April 28-30 in New York.

April 7-9, Philadelphia, — **Computer Control and Audit.** Contact: Q.E.D. Information Sciences, Inc., 141 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

April 7-10, Boston — **Senior Project Management.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020.

April 7-11, New York — **Management Style: Self-Directed Growth.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020. Also being held April 21-25 in San Francisco.

April 7-11, Washington, D.C. — **International Optical Computing Conference,** sponsored by the Institute of Electrical and Electronics Engineers/Computer Society. Contact: Sam Horvitz, P.O. Box 274, Waterford, Conn. 06385.

April 7-11, Chicago — **Managing Telecommunications.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020. Also being held April 28-May 2 in Atlanta.

April 8-9, London — **European Data Communications Standards Conference & Exposition.** Contact: McGraw-Hill Conference & Exposition Center, Room 3677, 1221 Ave. of the Americas, New York, N.Y. 10020.

April 8-10, San Francisco — **International Conference on Computer Capacity Management.** Contact: Institute for Software Engineering, P.O. Box 637, Palo Alto, Calif. 94302.

April 8-10, Chicago — **Selecting Your Data Entry System for the '80s.** Contact: Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

April 8-10, Atlanta — **Managing the DP Professional — The Challenge of the '80s.** Contact: Ubi Enterprises, 30 Milbank Ave., Greenwich, Conn. 06830.

April 8-10, San Francisco — **Effective Data Systems Development.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854. Also being held April 28-30 in Washington, D.C.

April 8-10, Vienna — **European Meeting on Cybernetics and Systems Research.** Contact: Österreichische Studiengesellschaft für Kybernetik, Schottengasse 3, A-1010 Wien 1, Austria.

April 8-10, Wellesley, Mass. — **Applications of Minicomputers.** Contact: Q.E.D. Information Sciences, Inc., 141 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

April 8-11, Wellesley, Mass. — **Human Relations.** Contact: Q.E.D. Information Sciences,

Inc., 141 Linden St., P.O. Box 181, Mass. 02181. Also being held April 22-25.

April 9-11, New York — **Minicomputer Systems: Guidelines for Successful Selection, Acquisition and Operation.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 23-25 in Chicago.

April 9-11, New York — **Data Processing: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 16-18 in Atlanta.

April 9-11, New York — **Fundamentals of Data Processing for the Non-DP Executive.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020. Also being held April 14-16 in New Orleans, April 15-17 in Chicago and April 21-23 in San Francisco.

April 9-11, San Francisco — **Data Communications: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 28-30 in New York.

April 9-11, Ann Arbor, Mich. — **New Directions for Facility Management.** Contact: Facility Management Institute, 3971 S. Research Park Drive, Ann Arbor, Mich. 48104. Also being held April 21-23 in Ann Arbor.

April 9-11, Washington, D.C. — **DP Operations Today: Effective Scheduling and Console Operation.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 16-18 in Houston and April 28-30 in San Francisco.

April 9-11, Washington, D.C. — **The Practical APL Conference,** sponsored by Scientific Time Sharing Corp. Contact: Conference Administrator, P.O. Box 861C-North Station, White Plains, N.Y. 10603.

April 9-11, Los Angeles — **Word Processing: An Overview of Concepts, Systems and Applications.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 28-30 in New York.

April 9-11, Atlanta — **Turning Up the Corporate DP Function: A Management Primer for the '80s.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 23-25 in Chicago.

April 9-11, Dallas — **Information Systems Conference for Users.** Contact: Wordpro International, 2035 N. Central Ave., Phoenix, Ariz. 85004. Also being held April 23-25 in San Francisco.

April 9-11, Washington,

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## Calendar

D.C. — Data Base Management Systems: A Comparative Analysis of General-Purpose Systems. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 28-30 in San Francisco.

April 10, Chicago — Telecommunications Management. Contact: Technology Transfer Institute, P.O. Box 49765, Los Angeles, Calif. 90049.

April 10-11, San Francisco — Understanding Data Communications Network Components. Contact: McGraw-Hill Conference & Exposition Center, Room 3677, 1221 Ave. of the Americas, New York, N.Y. 10020.

April 11, Atlanta — Designing Software Education. Contact: Culpepper and Associates, Inc., 4922 Heatherdale Lane, Atlanta, Ga. 30360.

April 13-16, St. Louis — 18th Annual Meeting of the Association for Educational Data Systems (Aeds). Contact: AEDS, 1201 16 St. N.W. Washington, D.C. 20036.

April 13-16, Atlanta — IBM Computer Users Group Conference. Contact: David G. Lister, Common-SI, 435 N. Michigan Ave., Chicago, Ill. 60611.

April 13-18, Oak Brook, Ill. — Education Coordinator's Workshop. Contact: Deltak, Inc., 1220 Kenington Road, Oak Brook, Ill. 60521.

April 13-25, University Park, Pa. — Executive Decision Support Systems Program. Contact: Pennsylvania State University Programs, 310 Business Administration Building, University Park, Pa. 16802.

April 14, St. Louis — Disaster/Recovery Workshop for Small DP Installations. Contact: Management Dimensions, 185 E. Garfield Ave., Pomona, Calif. 91767.

April 14-15, Milwaukee —

Symposium on Security and Privacy, sponsored by the Institute of Electrical and Electronics Engineers/Computer Society. Contact: University of Wisconsin, Department of

Business and Information Management Conference. Contact: Conference Office, 2728 Euclid Ave., Cleveland, Ohio 44115.

April 15-18, Birmingham,

April 20-23, Boston — Mark IV User Conference. Contact: Kathy Johnson, Informatics, Inc., 21050 Vanowen St., Canoga Park, Calif. 91304.

April 21-22, Washington, D.C. — How to Manage Data and Information as a Resource. Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

April 21-22, Winter Park, Fla. — Computer Negotiations

Workshop. Contact: International Computer Negotiations, Inc., 1331 Palmetto Ave., Winter Park, Fla. 32789.

April 21-22, W. Lafayette, Ind. — Workshop on Interconnection Networks, sponsored by the Institute of Electrical and Electronics Engineers/Computer Society. Contact: School of Electrical Engineering, Purdue University, W. Lafayette, Ind. 47907.

### Anything to Add?

The CW Calendar generally appears in the first and second issues of each month. Events are listed a month in advance.

All conference, show or seminar announcements should be sent to Calendar, CW Editorial Department, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701, at least six weeks prior to the month in which the event is slated to occur.

Electrical Engineering and Computer Science, Milwaukee, Wis. 53201.

April 14-16, San Francisco — Planning and Managing Teleprocessing Networks. Contact: Technology Transfer Institute, P.O. Box 49765, Los Angeles, Calif. 90049.

April 14-16, Chicago — DP Project Management: A Practical Approach. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 28-30 in New York.

April 14-16, Los Angeles — Data Base Management for Minis: A Comparative Analysis. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 14-16, Boston — Encryption for Computer Communications Security. Contact: Technology Transfer Institute, P.O. Box 49765, Los Angeles, Calif. 90049.

April 14-16, Dallas — Data Base Management Systems: General Concepts and Planning Guidelines. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 14-16, New York — Voice Networks. Contact: Technology Transfer Institute, P.O. Box 49765, Los Angeles, Calif. 90049.

April 14-18, Atlanta — Computer Contract Negotiation. Contact: Brandon Consulting Group, 1775 Broadway, New York, N.Y. 10019.

April 15, Washington, D.C. — Office Automation Briefing and Workshop. Contact: Micronet, Inc., Watergate Mall, 2551 Virginia Ave. N.W., Washington, D.C. 20037.

April 15-16, Teaneck, N.J. — Software Package Evaluation. Contact: Q.E.D. Information Sciences, Inc., 141 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

April 15-17, St. Louis — Disaster/Recovery Workshop for Large DP Installations. Contact: Management Dimensions, 185 E. Garfield Ave., Pomona, Calif. 91767.

April 15-17, Cleveland —

England — Communications Equipment and Systems Exhibition. Contact: British Information Services, 845 Third Ave., New York, N.Y. 10022.

April 16-17, Washington, D.C. — Office Automation Planning Workshop for Managers. Contact: Micronet, Inc., Watergate Mall, 2551 Virginia Ave. N.W., Washington, D.C. 20037.

April 16-17, New York — Integrating Business Machines into Local and Intercity Networks. Contact: The Yankee Group, Harvard Sq., P.O. Box 43, Cambridge, Mass. 02138.

April 16-17, London — Retailing in the '80s: Inventory Management for Profit. Contact: Online Conferences Ltd., Cleveland Road, Uxbridge, England UB8 2DD.

April 16-17, London — Peripherals 80 — The Computer Equipment Show, sponsored by Systems International. Contact: Iliffe Promotions Ltd., Dorset House, Stamford St., London SE1 9LU, England.

April 16-18, New York — Distributed Systems: Effective Approach and Applications. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 23-25 in Los Angeles.

April 16-18, Los Angeles — Digital Image Processing. Contact: Technology Transfer Institute, P.O. Box 49765, Los Angeles, Calif. 90049.

April 16-18, Chicago — Data Communications: Effective Network Design. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 16-18, Los Angeles — Integration of Word Processing and DP Systems. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 28-30 in Chicago.

April 16-24, Hanover, West Germany — Hanover Fair 80. Contact: Deutschemesse-und Ausstellungen-AG, Abt. 102-Fachtagungen, D-30000 Hanover 82, West Germany.

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# Any Disk Fits IBM CPUs, Consultant Testifies

By Connie Winkler  
CW Staff

NEW YORK — It is easy and inexpensive to attach other manufacturers' disks to an IBM 370/135 CPU, according to Neil R. Peterman, an independent consultant and recent witness in the U.S. vs. IBM antitrust case.

Peterman's testimony filled the 100,000th page of the trial transcript. However, the 100,000th page was not courtroom testimony, but a part of Peterman's deposition in this case. Portions of the deposition and his testimony in Memorex Corp. vs. IBM were inserted into the record Feb. 14 in lieu of live direct testimony.

Peterman, on contract for IBM counsel, connected a series of disks — primarily 2314 technology — to an IBM

or Digital Equipment Corp. CPU. In live cross-examination here, he described the necessary redesign and engineering work.

He proposed generally that any user could connect any disk to any CPU with similar engineering changes.

The Justice Department questioned the practicality and financial sense of making such adjustments. The government contended IBM in the early 1970s, particularly in a project called Smash, made disk design changes to discourage the attachment of other manufacturers' disk devices to IBM computers.

## Cost of Changes

"These changes that we made to this equipment were very similar to what

an engineering change would be ... and the cost is so small compared to the cost of the original equipment that they could be marketed economically," Peterman said.

He originally did the attachment work while with Systems Enhancement Associates (SEA), but he is now an independent consultant and contracting engineer.

In its case against IBM, Memorex suggested it spent \$1 million modifying the Memorex 3670 (which features IBM 3330 technology) to interface with a DEC disk.

## Attachments Made

Representative of the attachments Peterman made were the DEC RP02, the Control Data Corp. 841, the Ho-

neywell, Inc. 180 and the Memorex 660 drives — all to the 2314 control unit and through that to the 370/135. He also connected a Memorex 3670 disk to a DEC PDP-11/34.

At the Memorex trial in 1978, Peterman narrated a film showing this work to the jury. The film was introduced into evidence in U.S. vs. IBM, but not shown.

For designing and implementing the dozen attachments, which took more than 60 man-weeks, Peterman was paid \$84,000 by IBM's West Coast law firm of O'Melveny & Myers.

## Justice Figures

Justice Department lawyer Bernard H. Meyers, from the San Francisco office, introduced a used computer price listing for spring 1977 which quoted the average price for a 2314A-1 nine-spindle disk as \$24,000, including the control unit.

Myers compared this to the \$19,000 Peterman spent acquiring and modifying the CDC 841 disk — with no control unit. Because the 841 has only two spindles, it would take four 841s (at a cost four times \$19,000) to match the storage capacity of the 2314. Meyers further suggested this would be a high \$330 per 1M byte of storage.

Peterman countered that Meyers was "taking it out of the real world. You are trying to compare apples and oranges." The consultant said he could have negotiated the \$19,000 price, but did not because he was only making an engineering model.

Meyers developed similar numbers for the other manufacturers' disks which Peterman connected to IBM equipment.

## Different Technologies

The Justice Department also pointed out that 2314 technology is not compatible with the subsequent 3330, 3340 and 3350 disks, and 2314s have not been produced since 1970 nor marketed since 1979 by IBM.

On redirect examination Peterman said the differences between 2314 and 3330 technologies did not matter and that the newer devices "were really easier to interface" because device-dependent electronics were in the disk itself instead of the control unit.

Also on redirect examination Peterman did an about-face in his testimony. In questioning about an additional \$3,000 fee for SEA to connect a Univac disk to an IBM CPU, Peterman first testified the \$3,000 should have been included in his \$84,000 listing of charges to IBM counsel.

After a recess and on a second redirect Peterman said he had reconsidered and because there was a design error by Univac the \$3,000 should not have been included.



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# Will IMS Savvy Dead-End a DPer?

**Q** Although all of the programmers where I work are developing expertise in IBM's IMS, the structure and approach used by this data base management system (DBMS) is somewhat unique when compared with alternative commercial systems. Several of the programmers (and some managers) are pushing for a conversion to an alternative DBMS.

I personally don't consider a conversion feasible. Will the mobility of myself and my associates be stifled if we continue to use IMS?

**A** Not at all. DBMS have unique characteristics which must be understood before they can be used. IMS has received its share of bad publicity over the years (some of it deserved), but it has also gained tremendous momentum. It was one of the first DBMS and is supported by industry giant IBM.

Because of this momentum, the demand for programmers with IMS experience will remain high for some time. Fear not, your mobility is intact.

**Q** After attending one of your seminars and reading your book on DP documentation, it is apparent that you are a staunch advocate of comprehensive documentation.

Is there such a thing as overkill? Under the guise of documentation, one of the other managers writes memos to everybody on any subject. In my opinion, many (perhaps even all) are totally unnecessary and a waste of his time, my time and his secretary's time, as well as the time of many others. Surely you can't defend this mode of documentation.

**A** You're right, I can't. Unfortunately, some people are just memo writers. To these people, even the most meaningless happenstance merits a memo. These memos are not documentation.

Memos do have their place. Well-written memos that document findings or status are always appropriate. For example, the chairman of the management information systems (MIS) steering committee should send a formal memo to users who have requested MIS services. These memos might reflect the committee's decision and provide supporting statements for both the users' information and a permanent record.

Your friend, like so many others, appears to be addicted to memo writing

and must have a daily fix. I'm not sure there is a cure. Be leery when documentation is used as justification for

**A** It would be an economic disservice to the company to commit

'Turnaround Time' is a new reader service column that will appear regularly in *Computerworld*. All kinds of questions are invited, but readers are urged to keep them as concise as possible. Send them to Larry Long, Editorial Department, *Computerworld*, 375 Cochituate Road, Rt. 30, Framingham, Mass. 01701.

obviously unnecessary memoranda.

**Q** What percent of the DP budget should be committed to DP education?

anything less than an annual average of \$6,000 (not including salary) and eight man-weeks per professional employee and \$1,000 and three man-weeks for operations personnel.

Depending on the scope of the DP

## Turnaround Time By Larry E. Long

center's activities, the DP training budget should comprise between 10% and 15% (no, I didn't forget the decimal point) of the total DP budget.

I realize these figures are substantially above today's norm, but most computer centers are five to 10 years behind the state-of-the-art technology.

Long is a professor at Lehigh University, a DP consultant and author.

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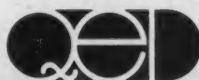
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## Response Time

Your reply to Pat and partner concerning "What To Do About a Poor Speaker" [CW, Feb. 18] was good for the immediate problem.

However, for a more permanent solution that is effective, educational, fun and tax-deductible, they should know about the Toastmasters organization. There is probably a club in their area.

If not, they can write to Toastmasters International, P.O. Box 10400, Santa Ana, Calif. 92711.

Clifton E. Crandell

Chapel Hill, N.C.

## EDITORIAL

### Reining In Federal DP

A federal agency DP official recently capped a demonstration of a new computerized system by proudly observing it had been designed by a private contractor with minimal government funding. Developing the automated information retrieval system had not diverted agency employees from their primary tasks and had been accomplished much faster than the agency could have managed on its own.

When asked if he was aware that long-standing government policy — set forth in Office of Management and Budget (OMB) Circular A-76 — mandates just such reliance on the private sector whenever possible, the official expressed surprise: "You mean, there's a government policy for this?"

This example of top management ignorance of government wide DP policies is not rare. Managers of federal DP centers are constantly at a loss to identify the employee responsible for overall physical and data security — a position specifically called for in OMB DP security guidelines.

One more example: Members of an interagency group of federal DPs were surprised last year to learn that the Office of Personnel Management (OPM), formerly the Civil Service Commission, after a year of work was finishing up new classification schemes for government DP positions — this despite the fact that members of their own organization were working closely with OPM on the project.

Recognizing this lack of communication between policy-makers and DP line managers, Rep. Jack Brooks (D-Texas), the irascible ayatollah of federal DP, is spearheading legislation to further centralize within OMB responsibility for federal information policymaking and compliance.

While OMB has moved in the last few months in just this direction, the Paperwork Reduction Act of 1980, proposed by Brooks, stems from a feeling on Capitol Hill that much more restructuring is needed.

The truth of the matter is that for all OMB has done to implement recommendations of the President's Federal DP Reorganization Project and the Commission on Federal Paperwork, the agency's much touted initiatives are just not filtering down to the middle management level.

As the reorganization task force noted, the federal government — its computers growing older every year and its need for state-of-the-art DP practices growing more critical every month — is falling farther and farther behind in its efforts to rein in its far-flung and unwieldy DP bureaucracy.

The Brooks bill is certainly a step in the right direction. By specifying \$8 million funding for the first year of the proposed OMB Office of Federal Information Policy, the legislation should help relieve an understaffed and underfinanced policymaking apparatus.

Through billions of dollars in research grants and research and development contracts, the federal government has been profoundly instrumental in the development of modern DP equipment and techniques. It should now move to be just as innovative in their use.

Speedy congressional action on the new Brooks bill would make a good start.

## DATA PAST

Five Years Ago  
Feb. 26, 1975

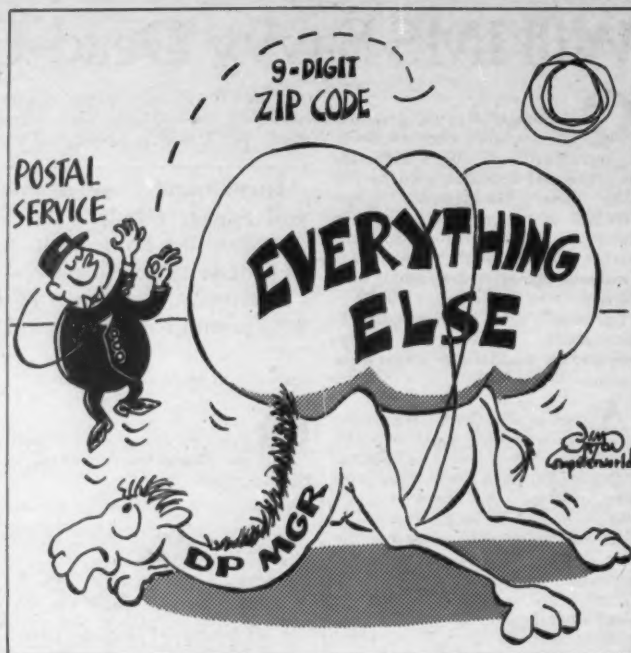
WASHINGTON, D.C. — Legislators across the country introduced bills into Congress that would require supermarkets with scanning equipment to stamp prices on items already marked with the Universal Product Code.

Eight Years Ago  
Feb. 23, 1972

SAN FRANCISCO — IBM was re-

strained by a federal district court here from discontinuing maintenance on computer systems with extended core memories manufactured by Advanced Memory Systems, Inc.

Federal Judge Lloyd H. Burke issued a temporary restraining order prohibiting IBM's withdrawal of maintenance services from users with Advanced Memory Systems core extensions on their systems



## LETTERS

### Do-It-Yourself Air Control

For months air traffic controllers have complained, the Federal Aviation Administration has stonewalled and passengers have flown in ignorance. Only in a recent *Computerworld* was a reasonable statement made: "Walk a Mile in Controllers' Shoes" [CW, Feb. 11].

No matter how carefully you watch someone, you will never have the feel for the job until you get your shoes dirty. Anyone with access to a Radio Shack TRS-80 can now get his shoes really dirty with an air traffic control radar simulator marketed by Creative Computing, Inc. for \$7.95.

ATC, as it is called, was written by an air traffic controller to simulate the experience of "handling" 26 aircraft at various speeds, altitudes, origins and destinations. Degrees of difficulty are obtained by limiting the amount of time allowed to work all of the planes. The object of the game is to direct all aircraft safely to their destinations within fuel and proximity limitations, much like its real-life counterpart.

The point here is not that a simulation has been created, but that this can be used as a real-time tool to demonstrate the difficulty of transferring from a radarscope to a manual system and back again.

At its more difficult levels, this "game" requires the absolute attention of the participant. Split-second decisions must be made and executed or conflicts between aircraft will occur. In reality it is a very difficult test of memory and decision making, utilizing the CRT as a map.

When the participant has gained sufficient confidence using this simple simulation, which in no way approaches the difficulties or responsibilities of the real air traffic controller, I propose the following experiment.

Start a moderately difficult game of ATC. Have a confederate who is also knowledgeable with the game reach

over and turn off the screen at some random point. This will simulate for you the radar failure that controllers experience. Remember the feeling you have as you gradually "lose the picture."

Remember that feeling the next time you fly to Chicago. Do you really want to be in a plane that is being guided by someone that has that feeling in the pit of his stomach?

William A. Smith

Lawrence, Kan.

### 'A Verbal Bouquet'

It is easy to throw brickbats, but we should be equally willing to strew flowers, and I think *Computerworld* deserves a (verbal) bouquet for its present quality.

The news is done well and the In Depth series has turned into a continuous series of thought-provoking and meaty articles.

Keep up the good work.

Henry E. Schaffer

Raleigh, N.C.

### Does Anyone Care?

Gruenberger and Jaffray, Joshi, Beitz — who really cares whether any day-of-the-week algorithm produces the correct results after the 28th of February in the year 4000? Does anyone honestly think his programs will still be running then? That's 2020 years from now.

Today's programmers' time would probably be much better spent making sure allowances have been made in current data bases and in current programs to properly handle the transition from one decade to the next or past the Julian date 99365.

Think about it!

James P. Egan

Arlington, Mass.

Other letters on Page 32.

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## HUMAN CONNECTION/Jack Stone

# Business Users Can Handle More Tasks

Everywhere one reads that the demand for information system services continues to outstrip the ability of DP departments to provide them and that the divergence is growing wider each day.

Hasn't the industry reached some kind of watershed in its development, where it's time to think through some drastic changes in current operations to gain control of our business? I'm not referring to decisions and programs that result in a nagging 3.9% increase in productivity or a 5.7% decrease in development time, but those that can result in 30% to 60% improvement in operational performance without a committant increase in resources.

One way to make progress is to unload responsibility for elementary applications right onto the users. The responsibility I refer to includes that for design, development, documentation, training, operation and maintenance.

The general strategy is to employ a high-performance, low-cost, display-oriented, interactive, general-purpose, data base management system

(DBMS) with a terminal interface that is so simple that anyone can operate the system.

The term "elementary" refers to the traditional "commercial" DP tasks, which are worth reviewing here: definition (and redefinition) of files and interfile relationships; data entry screen definition; multifield sort; query, string search and extract; file maintenance; business math; report

*This article is the seventh in a series, "DP Management in the '80s."*

generation and formatting; and management functions such as systems maintenance, security and systems documentation.

And I have to place a few more rather obvious restrictions on these applications:

- They should not be critical to the viability of the overall organization, and in fact, should be limited to the support of special needs of individual departments.

- Data volumes should be relatively small.
- Output should not be time-critical.
- Very limited technical assistance should be required from the DP organization after start-up.
- Data transfers between the user site and the main computer center should be able to be handled easily.

## Great Benefits Possible

Elementary applications range from perhaps 20% to 90% of the workload for most DP installations, and therefore, if users rise to the systems management occasion, the DP department would benefit greatly. Of course, with this action, most all the resources previously tied up with elementary applications will be freed to support the highest priority projects.

But there would derive some additional benefits, among which are these: For one, the most strident complainers — usually those users with the least important applications — would ultimately be silenced, and this would be no mean accomplishment. For another, the mass of maintenance per-

sonnel who are wasting away in the programmer pits could, in large measure, be phased into more productive work; certainly, much of their effort is involved with coding changes that can easily be handled by a DBMS.

And then there's the question of effective user training, an area that has been virtually ignored and surely will continue to be. With a proper user interface in the DBMS, the training issue, at least for elementary applications, disappears.

Will business users really be able to handle the whole spectrum of systems chores? Sure they will, as evidenced by capabilities of DBMS that are showing up today, particularly on the minis and micros.

To help justify this conclusion, I conducted a carefully controlled, scientific experiment to determine just how much trauma the unknowing person will undergo in trying to learn to use a contemporary DBMS. I borrowed a copy of "Microfile" [10K] (a DBMS from PRS-Program of the Month Corp. of New York) and installed it on my 48K, two-diskette micro, under the CPM O/S. Microfile, though designed to handle relatively small files, performs many of the basic functions of the better advertised DBMS and is extremely easy to use. I then briefed my middle son, Joe (circa 16), on its operation, and he had a check disbursement application designed and data being entered in about a half hour — and if that kid can learn it that quickly, anybody can!

In summary, individual scientific and engineering users have designed and implemented their own applications for years and it's time now — with new technology — for business users to do the same.

## READER COMMENTARY/Richard S. Mathews

# Why Has the Revolution Failed?

Much has been written over the last couple of years on how computer systems should be developed. A good number of these articles have proposed structured programming and design as the best way of developing systems. In addition, several other writers have observed that even with the availability of structured programming, we still seem to be suffering from many of the same ills. This has led them to propose new methods that in many cases represented a variation or twist in the structured programming method.

More than enough adequate disciplines for system development are now available. Though they certainly can and should be improved upon, the shortcomings of these methods are not the obstacles keeping our productivity and professionalism below desired standards. There are several basic attitudes and conditions within the DP environment that must be addressed and changed in order to make any significant improvements.

I believe there is one basic reason that is far and away the most important contributor to the miserable failure of the structured programming "revolution" — apathy. The sad truth that most fail to admit, or perhaps even observe, is that the vast majority of DP personnel just do not care and are not sufficiently motivated to carry out the "revolution."

Now I will admit that this is a personal observation based only on what I have seen. I have not conducted any surveys or administered any tests to verify my position. However, I do recall learning some years ago that for a revolution to be successful (and of course the reference was to the social and political variety), as few as 7% of the population need to support it. That

leads me to believe that a good 90% are either against or indifferent to the structured development philosophy.

As partial truth for my position, I offer a contradiction. If the DP community were not indifferent to structured programming, would it not be embracing it?

## Falling on 'Passive' Ears

I sincerely feel that an accurate assessment of our situation is as follows. There are several very good variations of the structured methodology that would increase the productivity of most development projects. Furthermore, several qualified and eloquent spokespersons for these methods have brought the message to the DP community. The problem is that the message has not fallen on deaf ears but, for the most part, passive ears.

Up and down the line, excuses can be made for not using structured programming. The manager will say he cannot afford the training or that his current project cannot absorb the increased overhead of being the guinea pig for a new way of doing things. The analyst will say he has philosophical objections to the method and that it will not work in his situation.

The programmer will say he already has a good way of doing things and, besides, he does not like being told how to work — it cramps his creativity.

And everybody knows DP is not a science, but an art form.

The result is that no method is used and the same mistakes are repeated.

I sincerely and regretfully feel that the real reason structured development has not been adopted is because the majority of the people are opposed to and fearful of an organized and disciplined way of doing things. After all,

to follow a method requires strong management, knowledge of the method and the will and intelligence to carry it out.

It really makes no difference whether or not the method or discipline (Continued on Page 36)

## THE TAYLOR REPORT/Alan Taylor

# Protection Still Lacking From Internal Sabotage

The recent suspected sabotage of Soviet Ambassador Anatoly Dobrynin's plane while it was being tracked by U.S. computer-controlled radar (CW, Feb. 11) was horrifying. In the middle of an international superpower crisis, such an incident could be a serious threat to peace.

This column, however, is not about the operations of political fanatics, either in or out of government. It deals with the accuracy and dangers of computers in "normal operation" — however that may be defined. And while missing air traffic control information can be extremely dangerous, the real danger has not been perceived either by the Federal Aviation Administration (FAA) or anyone else. Moreover, the real danger may well strike in your installation.

It was an FAA spokesman who, some time after the event, showed up the system's danger and, ironically enough, he did so while trying to exonerate the system. He simply stated that there was no reason to believe that the computer system caused data on the Soviet ambassador's plane to be

dropped from the radarscope.

Practically, he was trying to tell his audience that the incident was a case of sabotage by a supervisor, but he didn't want to use those words. The FAA system is known to be vulnerable to internal sabotage of a very obvious type.

Computers have not always been allowed to be susceptible to such sabotage. Many readers will remember the time when no programmer's pay was calculated on a computer because of the unnecessary danger in doing so. Payrolls for a staff including programmers were an obvious danger area and were protected accordingly.

Since then, while this particular precaution has been able to be dropped (the accountants and auditors are beginning to understand how to find programmer-type defalcations on computers), the computer area has begun to develop locks against its own operators and programmers. At first the locks were installed by operating systems to guard against people trying to take tapes off without rewinding.

(Continued on Page 36)

# Tale of a Turncoat Nothing More . . .

## SOCIOLOGY OF COMPUTING/Robert L. Glass

The restaurant was not crowded, and as X walked toward me, you could see his nervousness increase.

"Over here," I half whispered, beginning to fall under the spell of guilt that X was bringing with him like an invisible grey cloud across the restaurant. "I'm Mark Torey of Wings Aloft," I said, still in a hush, as he got closer.

X glanced about and slid quickly into the chair across the butcher-block table from me. A clearly audible sigh of relief came involuntarily through his lips. It was obvious that either this was his first experience in unethical behavior or else he was not very good at it.

"Let's get to the point," I began, more brusquely than I had meant. "As I told you on the phone, Wings Aloft bought your company's Linkluster data base management system a year ago. Now we need to make some changes in it. We've decided to modify it in-house. But your company refused to sell us consulting services to help us . . ."

"I know," he interrupted. "I was surprised at that. It seemed to me that consulting services are a valid way to make money. But the company wanted to do the modification itself. It's a matter of control. If one company starts to tinker with Linkluster and succeeds, then others will. We will have lost our lock on a pretty fair chunk of business. Or at least that's the company party line . . ."

"We need help," I said, moving

ahead. "Linkluster is a well-designed package. It's well modularized, it's well documented, it's efficient and it's easy to use. We like it or we wouldn't bother to modify it. But the problem is, there are almost no comments in the listing. We understand the broad picture. We even understand some of the details. But when you guys start linking pointers to pointers, we get lost . . ."

### Money First

"You're getting too far ahead," X began. "I don't want to talk about technical details yet. First, we have to talk about money. My company doesn't want me to be here. I'm taking quite a risk. And before I give out any information, we have to settle on terms."

I was prepared for that. Consultation costs money, whether it's from a company with an added overhead burden or from an individual. But I wasn't prepared for what followed.

"I want \$500 an hour and expenses,"

he said, his jaw jutting slightly in defiance. I whistled involuntarily.

"You must be crazy," I snapped back at him.

"No," he said, making an effort to stay calm. "I mean it. I've thought it over, and I won't do it for less. You've got to realize the spot I'm in . . ."

"Don't give me that," I burst in. "Don't give me that sob story about your problems in order to drive the price up. Your guilt is your problem."

The words had burst out in a torrent. It was too late to take them back.

"I'm sorry," I tried to recover. "I understand your position. But I am really not authorized to pay that much."

"I don't care whether you understand my position or not," he was angry, now. "You're the one with the problem. You've got a software package you don't understand. You're committed to modifying it in-house. You need me because no one else is going to help you. And if you're going to get me, you're going to pay my price."

He was right on all counts.

I cleared my throat, wondering where

to start next. "Don't think we're a bunch of dummies," I began. "We've got several key people with data base skills already going over Linkluster. One has even published papers in the field — do you know Cal Renfrow?" I asked, more to drop a name than to be conversational.

He nodded. "By reputation," he replied.

"Well, Cal's on top of most of the program already," I went on, slipping into hyperbole. "It didn't take him long to figure out the logic and the data items. All we need is a little help with some of the algorithms," I lied. The data items were as obscure as the pointer usage. Without following the pointers, we simply couldn't fathom the whole thing.

"In that case, \$500 isn't out of line, because you won't need much of my time." For all his ethical problems, X had a head on his shoulders. He had taken my best shot and used it against me.

The whole situation was slipping away. My anger had put on edge and

## LETTERS

### Dangerous Possibilities

A recent commentary touted the computer as the solution to the problem of gasoline rationing. It proposed that each outlet would have a micro-

computer and data would be fed into a central computer for recordkeeping purposes [CW, Jan. 14].

The reasoning seemed to be that the government can ensure equitable treatment of its subjects, given enough information at the right time. This is one of the most frightening ideas I have heard in a long time. If such a system came into being, why would anyone expect that the government would limit its use to gasoline rationing? Would it not "make sense" to extend the use of the system to other matters of critical importance to the national interest?

Certainly, this has the potential of being a giant step toward total government control of our lives. Virtually any matter could, by appropriate "reasoning," be designated as critical to the national interest.

Regardless of its merits, the potential of a computer-controlled system for malevolent application is so overwhelming as to more than outweigh any of its good points. I, for one, have no taste for trading freedom for convenience, presumed efficiency or professed equitability.

The axiom that possibility does not necessarily imply desirability becomes more critical as the potential for misuse of technology increases. But if professionals in computing — a field which has a very high potential for misapplication — fail to recognize the need to distinguish between what is possible and what is desirable, what hope is there?

J. Michael Yohe

Eau Claire, Wis.

### On Empty Files

I enjoyed Roger House's article "Loops and Firm Foundations" [CW, Feb. 18] in general and the remarks about empty files in particular.

This sort of problem seems to apply to the programs written on interactive systems by batch-oriented programmers.

The batch-oriented programmer ex-

pects a fixed order of program execution that simply does not exist on a good interactive system. Therefore, a user can call on a program and be inputting an empty file because of the random order of execution in the system.

Another version of this same problem is that of a missing record. This example is taken from an actual system I worked on for a small company whose whole operation was sales. (It had other troubles, but that is a much longer story.)

The orders were fairly complex because of the possible options each order contained. The salesmen's commission rates varied and were obtained from a file that had each salesman's name, address, bonuses and other data needed to mail him a check.

Now, we all know that you would always enter a salesman record in the salesman file before he would send in an order. Of course. Sure. And of course you would simply go through the salesman file and for each salesman on file, extract from the orders those that belonged to him in order to write him a check for that period.

It would be a waste of paper to use the orders file to drive the procedure. You might have to print one check per order, and even if you grouped things together, the order file would have to be sorted by salesman's number (it was already being sorted by order number for other programs).

The obvious problem came when we missed a salesman. The system had no checks for this whatsoever — after all, it had gone through the salesmen's numbers completely.

The solution I would propose is to use search procedures that can return a record even when there is no data — that is, an exception or "not found" record; for example, one with the character fields filled with "3," the numerics to zero or a special dummy value like all 9s.

Joe Celko

Atlanta, Ga.

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## ... Than a Question of Price

an urgency on the discussion. I decided to take a gamble. I'd name our top figure, get it out in the open and then stonewall him.

"I'll be frank with you," I said, looking him in the eye. "Our contracts people won't go \$500. Our top figure is \$100. And I'm afraid it's 'take it or leave it.'"

A silence fell on the table. It had been like dropping a cleaver on the butcher-block. He knew I was serious. And I knew he was, as the silence deepened. We were at a classic impasse. And I

didn't see any way out.

"Well," he began, and lapsed into silence again.

X edged his chair back from the table. "Well, I'm sorry," he said. "I really am."

### No Guilt Now

But a funny thing was happening. I watched his face. The guilt was falling away from him, rapidly, and a kind of euphoria was setting in.

"I had hoped we could reach agreement, but I guess it wasn't to be." A

smile flicked the corners of his mouth, belying the seriousness of his words. "I felt like you needed help, and I could give it to you. But I guess we're just too far apart in price."

"I'm sorry, too," I said lamely. I couldn't manage any more words. X turned, and fairly skipped past the tables and out the restaurant door, a broken field runner heading for a TD. I stood there, shaking my head, deep in thought.

I had a problem; Wings Aloft had a

problem.

But so does X; really, I realized, and the thought brought a small burst of consolation. He's euphoric now, I thought to myself. But sometime later today or tomorrow the truth will sink in and the guilt will return. He knows what he is now, I thought, or he soon will. It wasn't a question of "would he" anymore. It was only a question of price.

But it was small consolation, I knew, as I moved slowly toward the door. Small consolation, indeed.

## "The Tragic Pursuit of Perfection"

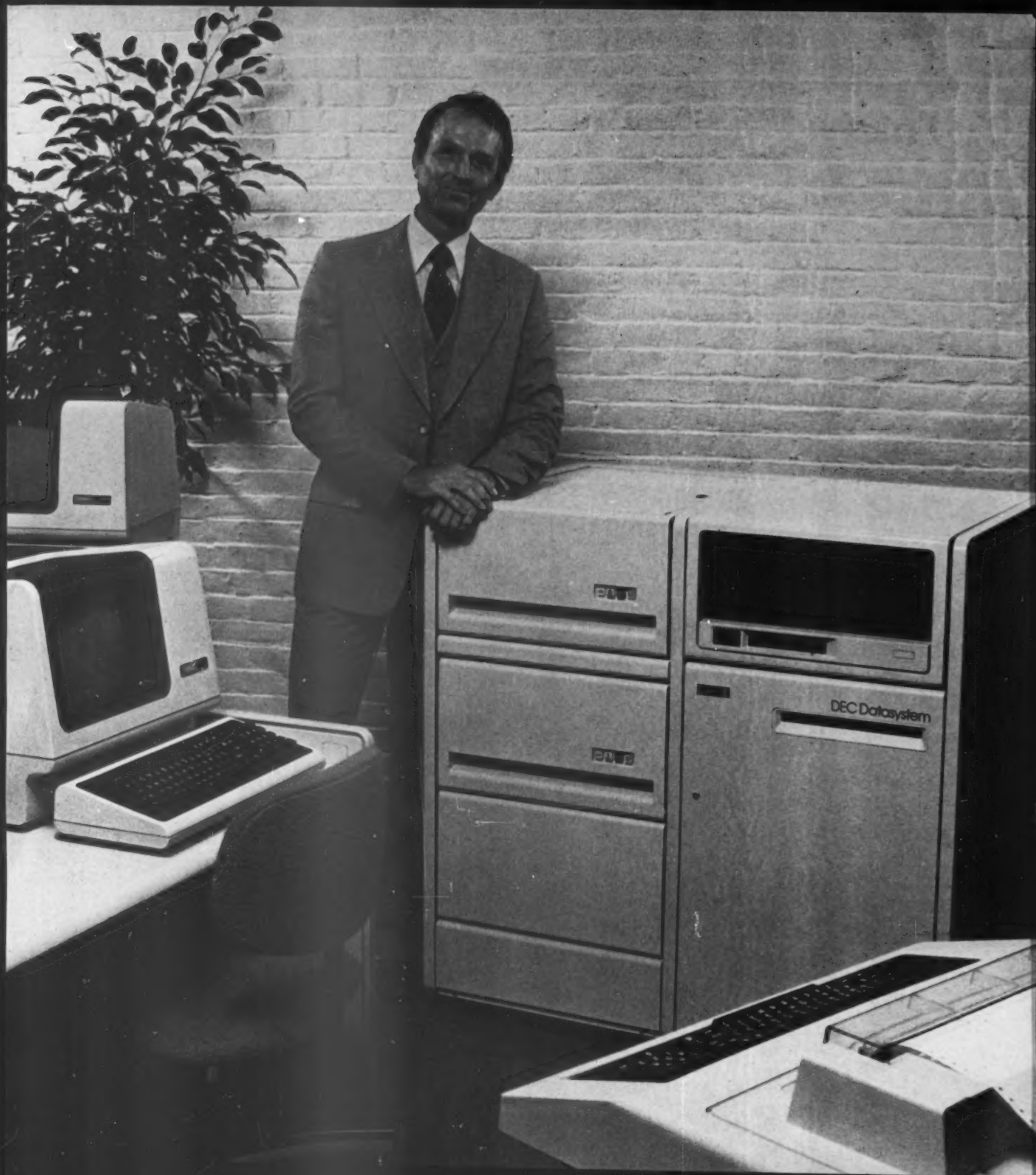


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# Protection From Sabotage Still Lacking

(Continued from Page 31)  
opening files without closing and so forth. Since those early days, more and more ingenuity has been used to protect accounting, terminals and privacy in the computer area itself.

## Professional Inertia

True, in some cases the protection did not come willingly. At first the argument was raised that since such precautions might delay a programmer and were therefore uneconomical, the outside world should take its risks. This egomaniacal concept of a programmer's rights seems now to have almost vanished when it comes to present data protection. But, as the FAA comment shows, the idea that we should also be protected against the

absence of data caused by internal mishandling or sabotage has not yet made too much headway.

Technically, providing such coverage would be quite easy. An instruction to remove a plane's codes from memory could have been checked against whether such a plane was already known to be in the air or if it was being serviced by the computer system. If it was, the removal instruction could have been stacked and delayed until an appropriate time for obeying it. (And at the same time, the console of the person giving such a dangerous order could have been locked immediately and the police called.)

The absence of this protection is obviously dangerous, but we will probably continue to hear the same sort of

delaying arguments about the problem of stopping up all the holes and the problem of costs. And probably the "let-it-go-on" faction will be persuasive for some time yet to come. My guess is that it will be another 10 years before computer processes are effectively guarded against internal sabotage, but that is a guess. For the time being, the expectable but unusual danger will be something with which we will all have to live.

## Priesthood of Computers

Society has a way of handling professionals who don't keep up with the dangers, but let them fall on others. They are put on a pedestal and charged dearly for falling off — even in a high wind.

This system of privilege and punishment has a great similarity to a priesthood in which any deviation against the official norm is sacrilege and is punished as such. The system is a bit severe, as it punishes the layman as well as the priest, but it can keep priests in order when nothing else does.

Already, in crime bills like the one sponsored by Sen. Abraham Ribicoff (D-Conn.), this concept is taking hold. Enormous penalties, not for the crime committed but because of any relationship with computers, are the hallmarks of such bills, and causes celebres like the Equity Funding matter mark their passage through various legislative stages.

It is fascinating to watch these steps and to see how a powerful profession such as ours is in fact controlled after a fashion by even more effective systems work. The upshot of it all will be that in our own good time we will protect people from our own systems — and that until then we will be made more and more subject to the disciplines that accompany dangerous privileges.

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## Why Revolution Has Failed

(Continued from Page 31)

adopted is structured programming. Some efficient and productive standard must be adopted for a group to perform well. Furthermore, the group has to be sufficiently inspired and self-motivated to care about performing its job in a professional, productive and competent manner.

Until discipline and motivation become part of the way we do things, we will continue to wander aimlessly. I think the adage, "You can lead a horse to water, but can't make him drink," describes our situation. We have been led to the water but do not appear to be thirsty. In the meantime, we face a slow death by dehydration.

Sullivan is a project manager at The Computer Co. in Richmond, Va.



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For DOS, DOS/VS, VSE Users

## 'Westi' Gets Access Control Method

PITTSBURGH, Pa. — An access method controller to automatically handle file access and control was added to Release 4 of Westinghouse Electric Corp.'s Westi teleprocessing monitor.

Westi is the firm's teleprocessing interface to IBM 360 and 370 or compatible systems operating DOS/VS, DOS/VSE, or environments.

The access method controller provides

multithreaded capability for Vsam, Isam-DAM and SAM files to handle any number of tasks from multiple terminals requesting the same or multiple files, a Westinghouse spokesman said.

In the earlier Westi Release 3, users were responsible for handling file access and control through programming commands such as OPEN, CLOSE, READ and WRITE; the access method controller automatically han-

dles those operations as well as in-queuing for simultaneous update protection, the spokesman explained.

The access method controller facility reportedly relieves the programmer of responsibility for controlling the access method used, disk device type, file conversions, blocking factors and multiplicity of return codes for each access method and for the operating system.

For Westi users operating in a data base environment, the vendor offers an optional multithread data base interface to such systems as Cullinane Corp.'s IDMS, Adabas from Software AG, Applied Data Research, Inc.'s Datacom/DB and IOSYS from Jeffrey L. Walker & Co. Opting for the data base interface does not increase the price of Westi Release 4, according to Westinghouse.

Memory requirements to run Westi depend on the number of files to be accessed, the spokesman said. He noted, however, that under DOS/VS, Westi 4 uses twice as much memory — a minimum of 8K bytes — as the earlier version, which required a minimum of 4K bytes.

Westi 3 users currently under a maintenance contract will receive Westi 4 at no charge, but will have to reassemble all application programs to convert to the new release, the spokesman noted.

Like the earlier version, Westi 4 is available in two models: Westi Local, for configurations where terminal hardware is 2,000 ft or less from the host computer, and Westi Local/Remote for installations with terminal hardware more than 2,000 ft from the host.

A one-time license costs \$11,000 for the Local version, \$15,000 for Local/Remote. Comparable prices for Westi 3 are \$8,500 and \$12,500 respectively.

Westi 4 maintenance after the first year costs \$1,000 for Local and \$1,250 for Local/Remote, Westinghouse said from 2040 Ardmore Blvd., Pittsburgh, Pa. 15221

## Performance Analysis Tool Unveiled for MVS Environment

LINCOLN, Mass. — A performance analysis and reporting tool for IBM and compatible systems running under MVS was introduced by BGS Systems, Inc.

In an unrelated move, BGS began offering its Best/1 capacity planning software package, marketed primarily to IBM users running MVS, SVS and VS1, to Univac 1100 installations running the Executive operating system.

The firm's MVS performance analysis software, called Capture/MVS, directly processes MVS measurement records, such as Systems Management Facilities (SMF) records, to analyze a number of system parameters, a BGS spokesman said.

For example, Capture/MVS can be used to determine capture ratios in CPU sizing studies, identify high overhead areas for tuning applications and develop representative baselines for capacity planning studies using either benchmarks or models.

The software reportedly separates total processing activity during any user-selected interval into distinct work loads representing batch, TSO, IMS and CICS categories, the spokesman noted.

Among the characteristics of transactions

making up each work load that can be reported are CPU time per transaction for TCB processing and for overhead functions such as paging, swapping and interrupt handling; I/O processing time and EXCP counts per transaction for each device and channel; capture ratios for each work load; and overhead percentages for the CPU and each I/O device and channel.

Priced at \$6,500, Capture/MVS uses less than 512K bytes of virtual storage, depending on the application, the spokesman claimed.

### Best/1 Package

The software reportedly can also be used to generate input files that are compatible with BGS' Best/1 performance modeling package.

Best/1 is now available to Univac 1100 users for evaluating the impact on capacity of work load growth, configuration upgrades and consolidations and changes in operating system parameters. Priced at \$24,500, 1100 Exec Best/1 uses 120K words of memory. BGS can be reached at P.O. Box 128, Lincoln, Mass. 01773.

## Nexis Gives Access to News, Magazine Copy

NEW YORK — Nexis, a computer-based information retrieval service, offers commercial users on-site terminal access to a library of newspaper, magazine and wire service copy in the complete, original text form.

Introduced by Mead Data Central, a Mead Corp. subsidiary, the Nexis library currently includes daily and Sunday editions of the *Washington Post*, *Newsweek*, the *Economist*, *Dun's Review*, the *Associated Press*, *Reuters* and *U.S. News & World Report*.

Subscribers can dial up Nexis via tele-

phone lines connecting one or more terminals at their sites to Mead's host machines at its computer center in Dayton, Ohio. Output can be viewed on a terminal screen or printed as hard copy.

The service is targeted to such commercial users as newspapers, radio and television stations, publishers and advertising agencies as well as to planning, advertising and public relations departments at other business organizations, a Mead spokesman said.

To gain access to the service, users are required to pay a monthly \$50 subscription

fee, \$250 for library access plus equipment lease charges ranging from \$55 to \$150 per month depending on the hardware configuration chosen. Introductory discounts are available through July 1, Mead noted.

Mead Data Central hardware offered for lease to Nexis subscribers include CRT terminal printing systems or the firm's Ubiquitous desktop terminals that can interface to a central printer either at the user site or at the Dayton computer center for a per-line charge. Users that order at least five Ubiquitous

(Continued on Page 38)

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## Form Letter Generator Keeps File of 50 Million Addresses

SAN ANTONIO, Texas — A form letter generation package that can reportedly maintain an on-line file of more than 50 million address records on up to 3,000 terminals for direct mailings is available from Resource Logic, Inc.

Called Literate, the system uses Datapoint Corp.'s Attached Resource Computer (ARC) — a shared mainframe system that can use up to 250 mainframes — for national mailing campaigns, the vendor said.

The system can be used to cover broad groups, such as all foreign car owners in the U.S., or it can be directed to specific subsets of a larger group. Within the address base, addresses can be recalled and form letters can be varied according to interest codes programmed into each subset, Resource Logic said.

Record recall usually takes two seconds. A full data base mailing will take about three weeks to complete if the user is printing letters on single-sheet letters. Speed can be improved by attaching IBM 370 or 370-compatible CPUs to the ARC system, the firm said.

Installation of the initial hardware and software requires 48 hours. Training takes two weeks and terminal operator training requires two hours for each operator, the vendor said.

Literate costs \$1,000 for a single-station configuration, \$2,500 for a multistation environment and \$7,500 for ARC configurations.

Resource Logic is at Suite 1222, 8916 Datapoint Drive, San Antonio, Texas 78229.

## Nexis Gives Access to News Copy Library

(Continued from Page 37)

terminals can obtain a printer from Mead at no extra cost, the firm said.

Nexis usage charges range from 50 cents per minute for browsing to \$1.50 per minute for more extensive use depending on the time of day the service is accessed. Usage charges are lower during weekends and weekday off-peak hours — that is, between 6:00 a.m. and 8:00 a.m. or from 7:30 p.m. to 2:00 a.m.

Normally, the service will be available from 5:00 a.m. to 2:00 a.m. Mon-

## HP 3000 Users Get Accounting

GLENDAL, Calif. — Mini-Computer Business Applications, Inc. (MCBA) will offer several of its accounting packages to Hewlett-Packard Co. 3000 users beginning in the second quarter.

HP versions of the following packages will be available: accounts payable, accounts receivable with sales analysis, order entry with inventory control, payroll and general ledger.

The packages will be offered in Cobol only, in accordance with

HP's recent implementation of Ansi 74 Cobol on HP 3000 systems, an MCBA spokesman said.

Single-use licenses will cost about \$3,000 per package. While MCBA will provide phone or mail support for one year, the firm is targeting its products to HP users with an in-house programming staff that can install patches and make minor software modifications as required, the MCBA spokesman noted from 117 So. Brand Blvd., Glendale, Calif. 91204.

day through Friday and on weekends, from 10:00 a.m. to 10:00 p.m.

Noting that programming knowledge is not required to use Nexis, the spokesman explained that users interact with the program in a dialogue fashion to indicate what information is to be retrieved, to view preliminary results on the screen and to refine the search if results suggest a better approach.

Nexis searches, activated through English-like commands, are based on the words actually used in stories and articles, giving users more thorough search capabilities than are possible with services that use an index or thesaurus, Mead contended.

The company stressed, however, that Nexis will not serve as a substitute for a subscription to any participating publication since newspaper issues, for example, will become available through the service one day after publication. Users will be able to access weekly magazines one week after publication.

Newspapers and wire service copy will be stored in the Nexis library from 1977 on; magazines, from 1975. The Nexis data base resides in an Amdahl Corp. 470V/5 and an IBM 370/158 dedicated to this application at the Dayton computer center. There, a second 370/158 used by the parent company serves as a backup host for Nexis, the spokesman explained.

### Memory Resources

Mead claims an unlimited number of users will be able to subscribe to the

national information retrieval service because memory can be added to the host computers as the need arises. The spokesman, however, would not reveal what memory resources are currently available to support Nexis.

Although Nexis is geared to users with little or no computer use experience, Mead will offer a four-hour training program that will teach users how to frame searches, provide hands-on experience with the system under an instructor's supervision and include two hours of free use.

Available free through July 1, the training program will cost \$75 per person with a maximum charge of \$2,250 per subscribing organization no matter how many of its employees enroll.

Mead Data Central is at 200 Park Ave., New York, N.Y. 10017.

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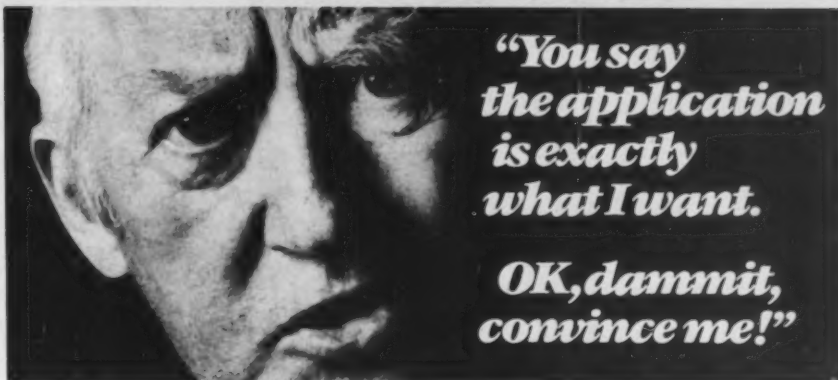
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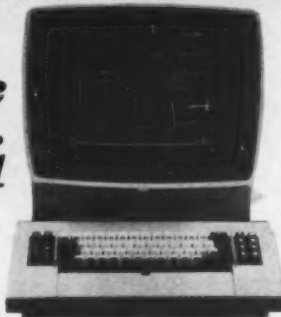
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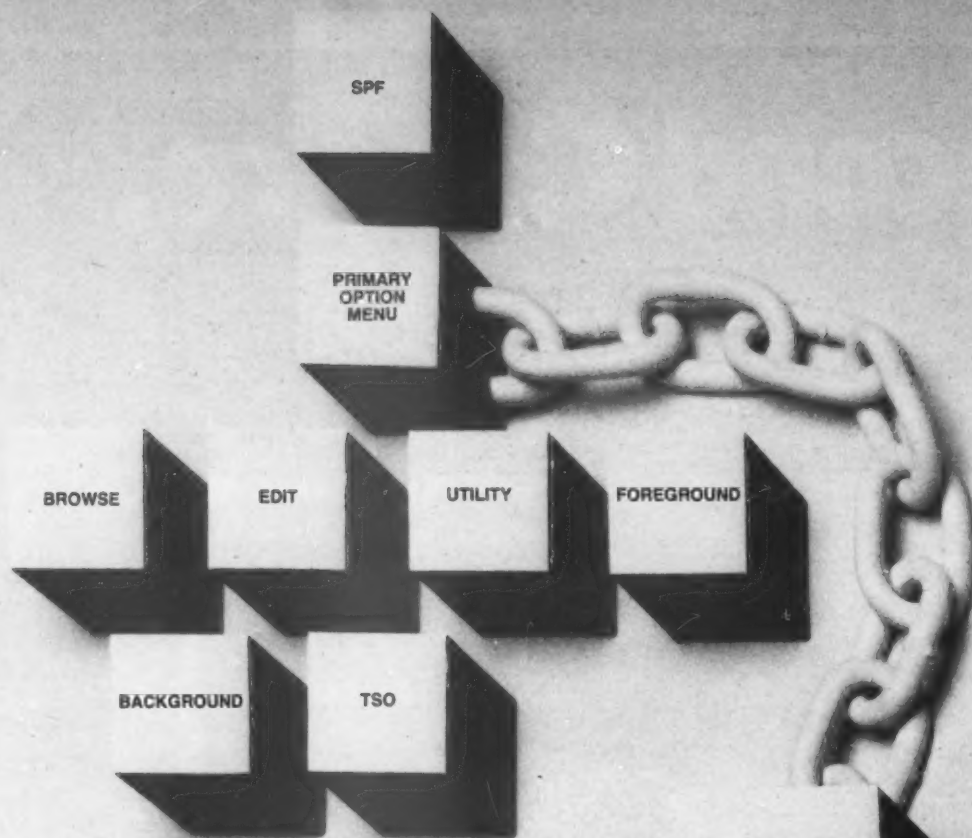
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## Data Base Control System Available for Series/1 Users

BERKELEY, Calif. — IBM Series/1 users can reportedly streamline their application development and cut their maintenance times with a data base control system from Intermethods Corp., the U.S. distributor for a Finnish software supplier.

Similar in function to IBM's DL/1 systems, ADBS/1 provides two utilities that allow users to create, describe, update and gain access to hierarchical data bases, according to an Intermethods spokesman.

One of the utilities is intended primarily for data base specification; the other, for reorganizing old data bases and recovering defunct ones from backup and log files.

Located primarily in the shared task set, the data base control package operates under Version 3 of Series/1's RPS operating system and support Cobol, PL/I and assembler programs, the spokesman said.

## SSI Enhances Modeling Aid

CHAPEL HILL, N.C. — SSI International, Ltd. recently announced Release 1.8 of Simplan, a planning and modeling system.

Release 1.8 includes such additions as risk analysis; goal seeking; sensitivity analysis; command language executives that allow the user to enter a string of commands via a text library; variable time descriptors; and what-if-analysis, the vendor said.

Simplan runs on IBM 360, 370 and 30 series CPUs under OS, MSP, VS1, VS2, MVS or VM/VMS. It also will run on Prime Computer, Inc. Model 450 through 730 systems under the Primos operating system.

The package requires a minimum of 200K bytes of memory for IBM systems and a minimum of 1M byte on Prime hardware, according to SSI.

Release 1.8 costs \$44,000, about \$7,000 more than last year's Release 1.7, the vendor said from 300 Easttowne Drive, Chapel Hill, N.C. 27514.

## Job Cost Ledger Added to 'Afis'

ROCKVILLE, Md. — A job-cost ledger module has been added to the Automated Financial Information System (Afis) used on Wang Laboratories, Inc. 2200 small business computers.

An accounting software systems, Job Cost Ledger keeps track of multiple jobs under the same contract or different projects under multiple contracts, according to Afis developer Doty Associates, Inc.

The Afis Job Cost Ledger includes a labor schedule routine that provides reports for personnel by account charged and account charged by personnel, the vendor said. Up to 599 employees and 269 contracts can be entered into the system.

Prices start at \$4,500 for Afis with Job Cost Ledger. Doty Associates is at Suite 434, 416 Hungerford Drive, Rockville, Md. 20850.

ADBS/1 is said to ensure data independence by separating application programs from the contents of users' disk files. As a result, the package reportedly permits users to add new data to their files without affecting existing applications.

Intermethods credited ADBS/1 with allowing users to manipulate several data bases concurrently from two partitions.

The package also allows users to define 15 segment types on four levels — all within the same data base, the source said.

ADBS/1 costs \$4,500 and is available immediately from Intermethods at 181 Vicente Road, Berkeley, Calif. 94705.

## 'Marian' the Librarian Updated

MEMPHIS, Tenn. — On-line recovery of program changes in source statement libraries is provided in Release 3 of Marian, Computer Software Unlimited, Inc.'s (CSU) on-line librarian.

Marian, which runs on IBM 360 and 370 processors under DOS, DOS/VSE, VSE and OS/VSE, automatically stores and recalls every change made to a library member, reducing system downtime that can result when programmers fail to document program changes, the vendor claimed.

The on-line recovery feature reportedly allows selective change reversal, the restoration of library members to a prior date status or the compilation and execution of

members as they existed before any modifications were made.

A security code structure is provided to protect against unauthorized access to library members. Users can assign security codes by project or by individual for read-only, update or unlimited access.

Seldomly used members can be stored off-line on Marian's history file and selectively restored to the active library file when required, the vendor noted.

The latest Marian release interfaces with any teleprocessing monitor and costs between \$5,000 and \$10,000, the vendor said from 1806 Malabar Drive, Memphis, Tenn. 38138.

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## IBM, DEC Users Gain General Ledger System

ARLINGTON, Va. — An on-line general ledger system for IBM 360, 370, 4300 and 30 series CPUs and Digital Equipment Corp. PDP-11 minicomputers is available from American Management Systems, Inc.

Corporate General Ledger (CGL), is said to offer independent main reporting attributes; automated foreign currency transactions; fully supported Securities and Exchange Commission and Federal Trade Commission business reporting; consolidations across multiple charts; and automated spreading and incremental entry.

The package also offers automatic consolidations across multiple charts with eliminations at the proper levels and dynamic allocations controlled through parametric table entries, a spokesman said.

### Audit Trail

An audit trail is provided for security and control over any period desired. This allows the user to plan project reporting across fiscal years.

CGL can be used in centralized or distributed processing environments, according to the vendor, which will provide on-site training, conversion

and consulting.

The package comes with documentation and an enhancement program. It costs \$60,000 for IBM systems under OS or DOS CICS and it costs \$45,000 for DEC PDP-11 systems under RSX-11M.

American Management Systems is at 1515 Wilson Blvd., Arlington, Va. 22209.

## Seminars to Eye Software Management

LOS ANGELES — Techniques for managing software will be covered in the "Software Summit Series" of conferences scheduled for April 21-25 in Washington, D.C., and May 19-23 here.

Design, development and management techniques for each phase of the software life cycle will be presented for such areas as data base, distributed processing and microprocessor software.

Co-sponsored by the American Institute for Aeronautics and Astronautics (AIAA) and the Data Processing Management Association (DPMA), the conferences will be held at

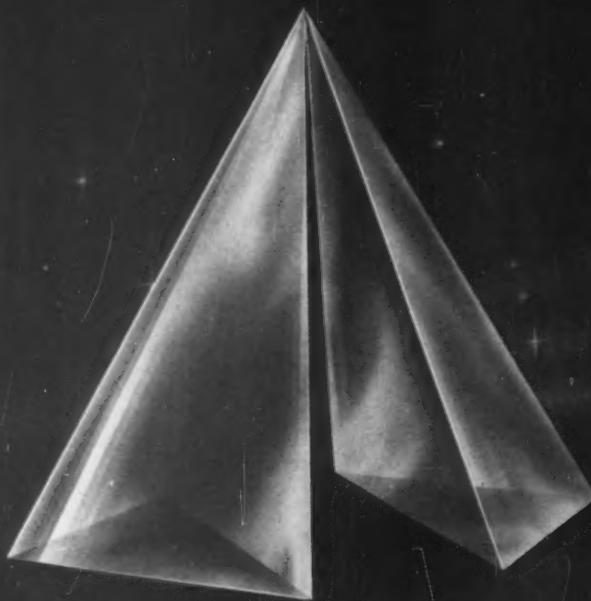
the Westpark Tyson's Corner in Washington and at the Pacifica Hotel in Los Angeles.

Attendees have the option of attending one of two seminars each day of the week for a total of five sessions. Progressive discounts are available for multiple session attendance. For example, the cost for one seminar is \$195; for two, \$175; for three, \$150. Comparable fees for individual AIAA or DPMA members are \$165, \$150 and \$130.

More information is available from AIAA Seminars, Department SWS, Suite 106, 5959 W. Century Blvd., Los Angeles, Calif.

## Coordinated Network Architecture

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## Package Backs RMS-11 in Basic

NEW YORK — Digital Equipment Corp. PDP-11 users running the RSTS/E operating system can get software support for RMS-11 disk file structures for Basic-Plus from Enterprise Technology Corp. (ETC).

The package consists of a set of Basic-Plus subroutines which directly access RMS-11 files and interpret the file organization as does RMS itself, the vendor said.

The ETC package provides read and write support for RMS-11 sequential files and provides read-only support for indexed files.

RMS-11 subroutines can also be incorporated into Basic-Plus-2 programs to eliminate task build-up time, the vendor added.

The package costs \$500, ETC said from 663 Fifth Ave., New York, N.Y. 10022.

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# Datapoint CPU Users Get Remote Diagnostics

SAN ANTONIO, Texas — The Remote Disk Operating System (Remdos) from Datapoint Corp. for its dispersed processors reportedly facilitates remote maintenance and diagnostics.

Remdos is said to allow any Datapoint processor with synchronous communications capability to assume control over another, similar processor's functions. This allows the user to test software on a

remote location.

The user can alter or transfer data structure via telephone lines, a spokesman noted. The software will almost eliminate long-distance travel expenses for software diagnostics, he added.

The package can link any two processors using Remdos and synchronous communications adapters, such as Datapoint's 9481 or 9404 interfaces, or the internal com-

munications adapters of its 1800 processor. Communications are supported at rates of up to 9,600 bit/sec over dial-up or leased lines.

Remdos is compatible with all Datapoint systems using a 5500 instruction set. These include the 1800, 3800, 5500, 6000 and 6600 processors.

Links can be made with these processors whether they are functioning as a stand-alone system or as part of Data-

point's Attached Resource Computer (ARC) system, the vendor said.

Remdos options include a remote console hookup and a message-switching facility that allows operators to communicate with each other via keyboards and CRT screens, Datapoint added.

Special commands let the user transfer disk files in either direction and initiate programs or utilities to be execu-

ted at the remote site upon sign-off. This allows the user to set maintenance procedures to be executed after the telephone link has been disconnected, the vendor said.

Remdos is free to Datapoint customers, but a \$50 mounting fee is charged to install the package on tape or disk. Datapoint is at 9725 Datapoint Drive, San Antonio, Texas 78284.

## Rubel Adapts Interpreter to Fit DEC RSX-11M

BOSTON — An English-like command language interpreter originally developed for the Digital Equipment Corp. VAX/VMS and RSX-11M-Plus operating systems is now available to RSX-11M users.

The RSX-11M Digital Command Language (DCL) supplements, but does not substitute for, DEC's Monitor Console Routine (MCR) interface on RSX-11M Version 3.2 systems, according to the developer, Andrew Rubel & Associates, Inc.

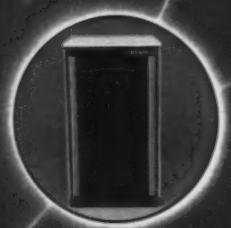
DCL uses English commands such as COPY, RENAME, ASSIGN, HELP and DIFFERENCES. Also included are syntax error diagnostics and prompts to let a user know when mandatory parameters are omitted, the vendor said.

Along with the DCL command routines, Rubel is offering a library of Fortran-callable routines, a DCL parser and a DCL command generator program to help users create commands.

The Fortran-callable library contains routines for line parsing, character manipulation, prompting and keyword matching.

With the command generator, users can input two ASCII tables describing command parameters and qualifiers, then create the syntax tables that drive the DCL parser, the vendor said.

RSX-11M DCL licenses for \$750 including documentation. Maintenance after the first year costs \$250 from Andrew Rubel & Associates, One Soldiers Field Park 605, Boston, Mass. 02163.



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To provide the link between LCU's and remote sites, PARADYNE has implemented synchronous data link control (SDLC) line protocol. PIXNET's SDLC adds additional efficiency because its unique data compression routines result in higher performance

throughout the network. The compression scheme is transparent to any combination of device addresses or user data. Thus, the user can expect a significant reduction in the number of bytes transmitted.

Intelligence is placed in PARADYNE's network control units (NCU's), which are positioned at key locations throughout the network. The NCU is minicomputer-based and is responsible for all network traffic, providing multiple application access, multiple CPU access, application switching, alternate routing and line concentration. The NCU permits total network control, independent of host processors.

PARADYNE's remote control unit (RCU) provides the interface between the PIXNET communications system and PARADYNE or IBM peripherals located at sites away from the processor. The RCU contains integrated controllers that support PARADYNE card readers, line printers, magnetic tapes, diskettes, 3270's or a hard copy console. Finally, the RCU can duplicate the IBM multiplexer channel and allow IBM peripherals to be supported.

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# Small Shop Installs Production Control Package

IRVING, Calif. — Bob Shepard has a comparatively small shop, but he has big ideas. As director of DP for Kawasaki Motors Corp., Shepard recently decided to install a production control system normally geared for large DP installations.

Running the software — a University Computing Co. (UCC) Seven package — on an IBM 370/158 under V51 with CICS, Shepard set his sights

on turning a basically manual production system into a more accurate one that would require fewer trained personnel to operate.

Kawasaki's DP facility runs about 10,000 jobs monthly and supports parts and accessories, finished goods, warranty, financial accounting, manufacturing and marketing operations.

Stepping up from an overnight batch mode with CICS

inquiry during the day, Shepard wanted a production control package that would eliminate some of the human errors that crop up in a manual system. Kawasaki also wanted to speed up its production control operation.

## Staff Cut by Two

"With a system that can do the work for you, reruns will go down and the ability to react to abends will quickly go

up," Shepard said. "Our night crew consists of three people. The operators take care of everything in the computer room, including abends. With a software system to do most of the work, a lot of pressure is removed."

In fact, so much pressure has been removed that Kawasaki has been able to eliminate two highly trained employees on the DP staff, Shepard said. For Kawasaki, evaluating

software packages resulted in a toss-up between UCC Seven and a similar product put out by Johnson Controls, Inc. The firm decided the UCC package better suited its needs.

Installing UCC Seven took longer than Shepard expected, but he attributed the delay to having fewer than normal in-house support people present during the installation. Several staff members were away on sick leave.

Future staff shortages will not cause similar delays because the software package automatically handles many manual functions, Shepard said.

The production control group is responsible for verifying input and determining that the right jobs have been scheduled for batch processing at night. After the jobs have been run and files updated, production again checks the data and distributes reports.

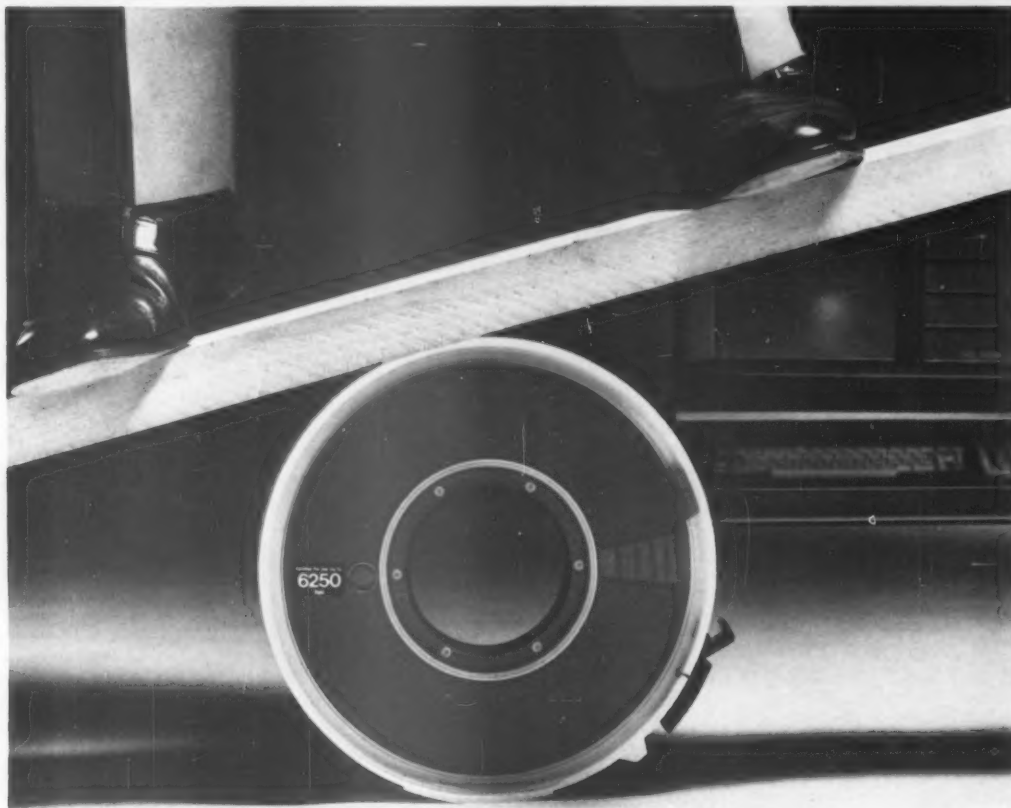
Pleased with his results so far, Shepard says he will expand UCC Seven to all of Kawasaki's production systems. He expects this to eliminate time spent setting up future jobs and also cut down on errors.

"Some people might say you have to dedicate an entire staff to installing an automated production control system.

"Kawasaki could not because it has only one full-timer.

"They might also say that if an installation isn't complete within a given time, it's a failure. That's just not true," Shepard said. "We've also proved UCC Seven isn't just for very large operations."

Shepard conceded, however, that his one full-time employee is a good one, and the system probably would not have been installed as smoothly without "extremely competent" help.



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# Along With 3278-Compatible Unit Telex Brings Out Rival for IBM 3101

TULSA, Okla. — Telex Computer Products has introduced a CRT terminal it claimed is more versatile but less expensive than IBM's 3101.

Telex also released an IBM 3278-compatible terminal that is reportedly adaptable for work under IBM's Systems Network Architecture (SNA) and Synchronous Data Link Control (SDLC) protocol.

Pitted against the 3101, which

debuted last fall [CW, Oct. 15], Telex's Model 310 terminal displays 1,920 char. on a 15-in. (diagonal) screen using the 7 by 11 dot matrix. The 310 features the 128-char. ASCII set and supports half- or full-duplex communications in the 110- to 9,600 bit/sec range, a spokesman stated.

With a typewriter-styled keyboard, the 310 is compatible with terminals from Teletype Corp., he added.

The second terminal release, Telex's Model 278E, displays 1,920 char. on a 9-in. screen and sits on a standard-size desk. The 278E offers most of the features available with IBM's 3278 terminal except for a light pen, the Telex spokesman said.

Up to seven 278Es and/or 278s, the larger terminal Telex announced last June, can be connected to either Telex's 276 or IBM's 3276 display station/-

controller to form multistation clusters for data entry or query/retrieval tasks, according to the spokesman.

## Target Users

Telex is aiming the 310 at education, time-sharing and program development users as well as those who apply minicomputers to query/retrieval operations.

"The primary demand for the product comes from our existing base of interactive terminal customers who need ... Teletype-compatible terminals as well as interactive 3270-compatible products," the spokesman said.

"Operator training requirements are minimized," he continued, "because both products use identical keyboard layouts."

The 310 displays 24 80-char. lines with a 25th line available for diagnostics or operator prompting. Other features include RS-232C and 20mA

(Continued on Page 46)

## As Well as Cluster Controller Memorex Adds 3278-Type Devices

CUPERTINO, Calif. — IBM mainframe users have gained a line of CRT terminals and a remote cluster controller from Memorex Corp.

Claimed to be functionally equivalent to IBM's 3278 terminal, the Memorex 2078 comes in four models. All four display characters within a 7 by 14 dot matrix except that upper case letters appear in a 7 by 9 dot matrix on 15-in. screens.

The Models 1, 2, 3 and 4 have 960-, 1,920-, 2,560- and 3,440-char. screens, respectively.

The monitor featured by the 2078 displays a 94-char. set consisting of 26 upper case and 26 lower case letters, 10 numerals and 32 special characters. Upper/lower case display is switch-selectable by the operator.

Designed to operate with IBM's 360, 370, 30 series and 4300 mainframes, the Memorex 2078 is available with three keyboard options: a 75-key arrangement for data entry; 75-key Ebcidic typewriter; and 87-key Ebcidic typewriter.

Memorex has included a "PA-3" key on its typewriter keyboards that allows conversion from a data entry to typewriter-style mode without software changes when the 2078 is attached to the vendor's latest re-

mote cluster controller.

Called the Model 2076, that controller is functionally equivalent to the controller and multiplexing capabilities of the IBM 3276 control unit/CRT station, a Memorex spokesman maintained. The Model 2076 supports up to eight Category A communications devices in the binary

synchronous control mode.

A single 2076 controller will support all four models of the 2078 CRT terminal or the IBM 3278, the Memorex spokesman said. By adding up to three optional device adapters, the 2076 user gains support for as many as eight terminals and printers.

(Continued on Page 46)

## Spectron Unveils Line Monitors

MOORESTOWN, N.J. — A series of line monitors and interactive analyzers is being introduced this week by Spectron Corp. for applications ranging from straightforward data monitoring to interactive use with advanced protocols.

All four units — the Datascope D-580, D-582, D-584 and D-586 — use a built-in 5-in. CRT for display. The two larger units are available with an optional keyboard for loading data buffers. All the Series 580 Datascopes offer bit-level handling, high-speed monitoring, block check character generation and checking, and character trapping.

The D-580 incorporates a 2K-char. input buffer; 4-char. on-line trap; framing for 8-bit synchronous, binary synchronous and Synchronous Data Link

Control (SDLC) and protocols; and 15 internal clock settings from 50- to 9,600 bit/sec.

It was designed primarily to trap specific data patterns on-

line. Idle suppression allows storage of only true data, according to a spokesman.

The other three members of the

(Continued on Page 46)



The D-586 Datascope tops Spectron's D-580 series of bit-oriented network diagnostic equipment aimed at users of "advanced" communications protocols.

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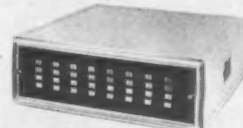
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## TV Images Transmitted

READING, Mass. — A Multibus-compatible, single-board graphics system that with a modem allows transmission of TV images over voice-grade telephone lines is available from Datacube, Inc.

The vendor's VG-120 system simultaneously digitizes and stores real-time data from a TV camera or other source, enters it into an on-

board 320- by 240- by 6-bit memory module and then displays it on a TV monitor. Output video is either a 6-bit gray scale, for the VG-120A, or a 64-bit "pseudo-color" display, for the VG-120B.

With OEM discounts available, the system costs \$2,495. Datacube is at 670 Main St., Reading, Mass. 01867.

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## Tektronix 4000, Plotter Tied

CONCORD, Calif. — Users of the Tektronix, Inc. 4000 series of CRT terminals can now access the Nicolet Zeta Corp. 3653 SX 36-in. pen plotter when they order the plotter with an optional general-purpose interface bus (GPIB) interface.

The Zeta plotter operates through the GPIB interface using a command set that is reportedly upward-compatible with the Tektronix Plot-50 command set. It adds commands for scaling the plot, selecting one of the 3653SX's four pens, slanting and/or shading of annotation, drawing circles and circu-

lar arcs and drawing with user-defined dot-dash patterns, Zeta said.

Graphs are previewed on the Tektronix terminal; the plotter then produces hard copies using a variety of colors and line thicknesses on paper, mylar or clear acetate.

The cost of the 3653SX plotter with a built-in GPIB interface is \$19,000. Prices for the 12-in. Model 1452B, a four-pen plotter, and the 12-in. Model 1553, a one-pen plotter, are \$8,750 and \$5,950, respectively, the vendor said from 2300 Stanwell Drive, Concord, Calif. 94520.

## Telex Adds IBM 3101 Rival

(Continued from Page 45)

current-loop communications interfaces, switch-selectable reverse video, a number of cursor movement capabilities and programmable brightness levels.

The 310's keyboard is detachable and offers programmable function keys, a numeric keypad, audible tone bell and repeating character keys.

Weighing 49 lb., the Telex 310 stands 18.5 in. high, 16 in. wide and — with its 29-in.-wide keyboard — 19.4 in. deep. The 310 costs \$1,250 compared with the \$1,295 to \$1,520 range quoted by IBM for the 3101. Moreover, Telex will grant quantity discounts up to 25%.

As for the 278E terminal, Telex called it small enough "to bring on-line, interactive computing resources to locations where space or office decor limitations do not permit installation of full-size IBM 3270 terminal products."

The 278E was designed "for management information systems directors, sales personnel, nurses, bank tellers, manufacturing supervisors, company presidents and many others who can benefit from access to large computer data bases," the spokesman added.

Like the Telex 278, the 278E can be attached to an IBM 3274 controller for use in large cluster configurations. Further, the 278E reportedly supports printers from Telex or IBM with speeds ranging from 40 char./sec to 400 line/min.

The terminal's display features include the ability to switch from upper case-only to upper/lower case operation, a 25th line for indication of status, field formatting and a nonflare screen. The keyboard can be used in local mode and has an array of cursor control capabilities.

The 278E costs \$2,200; lease plans are available.

Deliveries of the Model 310 begin



The Telex 278E CRT terminal features a 9-in. screen and was designed to fit on a standard office desk.

this month, while 278E shipments are slated to commence this fall. Telex Computer Products is located at 6422 E. 41 St., Tulsa, Okla. 74135.

## Spectron Unveils Four Monitors

(Continued from Page 45)

series also monitor data, but add interactive capabilities. Front-panel facilities are similar for all models.

The D-582, designed for field work, offers dynamic block check character generation and checking, user diagnostic programs, a 2K-char. input buffer and a 50-char. output buffer.

Emulation of data communications networks is accomplished on the D-584, which is equipped with four counters plus one interrupt timer, a "powerful" instruction set and the ability to generate programs of up to 69 steps, according to the spokesman.

The D-584's standard 2K-char. buffer can be expanded to 4K char. The output buffer handles 300 char. compared with the 50-char. capacity of the D-582.

The D-586 tops the line. Designed for "the sophisticated user of advanced protocols," the bit-oriented unit offers instructions capable of handling SDLC and the High-Level Data Link Control protocol.

A 4K-char. buffer is standard, as is a 1.2K-char. output buffer. The D-586 includes all the features of the D-584, but can generate diagnostic programs up to 99 steps, Spectron said.

The D-580 costs \$5,900. The D-582, D-584 and D-586 cost \$7,700, \$9,800 and \$11,900, respectively. Spectron is at 344 New Albany Road, P.O. Box 620, Moorestown, N.J. 08057.

## Memorex Offers 3278-Type Units

(Continued from Page 45)

Options for the 2078 include security keylock, audible alarm, extended keyboard cable, alternate coaxial connector and unprotected field indicator.

The Model 1 of the 2078 line costs \$2,431 with the 75-key data entry keyboard. That model can be leased on a two-year plan for \$44/mo. The 2076 remote cluster controller can be purchased for \$4,494 or leased for \$72/mo for two years.

Memorex is located at 18922 Forge Drive, Cupertino, Calif. 95014.

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# Replaces Batch Processing Forty-Terminal Net Ends Firm's DP Queues

By a CW Staff Writer  
ANAHEIM, Calif. — An electronics and systems manufacturer here has replaced an inadequate keypunch-based batch processing system with what it called a more accurate and timely two-computer sys-

tem driving a 40-terminal network.

Ten months after installing an interactive terminal system, Interstate Electronics, Inc. reported that its inventory system and other applications now are run and received

while they are still current. New applications planned into the system have improved the firm's processing capacity and reduced waiting time.

At Interstate, an IBM 360/40 batch processing system had done yeoman duty for 10 years. Rapid growth, however, had left users from the company's eight-building complex literally standing in line for data from the computer, according to Bill Tulloss, manager of management information systems (MIS).

Departments within the company saw their requests for processing back up. When processing was completed, it was often out of date. This presented a particular problem for inventory control, the manager explained.

## Two CPUs

The system that corrected this problem was the result of detailed planning. It is based on two Hewlett-Packard Co. HP 3000s tied together in such a way that a user accessing one can also access the second system through the first.

One CPU is used for produc-

tion applications and has 1.5M bytes of storage. The second, with 1M bytes, is used for program development and for environmental data analysis at ocean disposal sites for the firm's Oceanic Engineering operation.

This operation owns a ship that travels on-site to take measurements and then returns the data to Interstate for analysis and inclusion in environmental impact statements.

The firm also runs what it calls Integrated Production and Logistic Supports, a material control system for tracking equipment that the government buys to support the operation of nuclear submarines, he added.

All of the terminals are from HP. They include the models 2621 and 2640 CRT terminals, as well as CRT graphics terminals. The system features Interstate's own voice data entry system that is used at the company's receiving dock to record material receipts.

## Main Objectives

The primary objective of the new operation was to expedite the transfer of information to and from the eight remote sites, some a mile away from the CPUs. Other major goals were to save time and increase productivity, according to Tulloss.

Company users were polled about what information they wanted, when they needed it and in what form it would be most useful. Interstate was also interested in setting up an on-line material requirements planning and manufacturing control system, on-line logistic and inventory support and general time-sharing services.

The resulting system has been dubbed Inform, an acronym for Information Network for On-line Reporting and Management. Medium-sized HP 2635 terminal printers and the CRT terminals were placed throughout the remote sites to give users interactive

access to data banks.

With eight sites involved, the firm was concerned about accomplishing the connections between its terminals and the two HP computers economically. Interstate had been working on the system design with the Systems Management Group of A-T-O, Inc., its parent company in Willoughby, Ohio.

"We didn't have any real expertise in this area," Tulloss observed, so the firm called in Moxon Electronics, a local distributor which specializes in computer communications. Moxon was able not only to supply all the equipment needed to assemble the network over phone company lines, but also to lend its experience to configure a communications system that would work well at a reasonable price.

## Three Options

Interstate had three options. The first was to use Bell 202 modems on a private line operating at 1,200 bit/sec. This option was vetoed, according to Tulloss, both because it was too expensive and also because the data transfer rate would have been far below the capability of the terminals connected to it.

The second option, found also to be prohibitively expensive, was to put a minicomputer in each remote facility.

The choice Interstate finally made was to select 12 Micom Systems, Inc. data concentrators offering eight channels, each with a transfer rate of 2,400 bit/sec. This permitted the firm to install eight terminals per phone line, reducing the cost per channel, according to the manager.

Further, the concentrators could be used as intelligent analyzers to minimize data loss and errors. Since last April, only one unit has failed — and it did so within the warranty period.

## Unit Delivers Line Control For Bit, Byte Protocols

SAN JOSE, Calif. — A protocol controller is available from Fairchild Camera and Instrument Corp. that provides line control for both bit- and byte-oriented protocols.

The Model F6856 handles most popular line protocols at 1M bit/sec, including Synchronous Data Link Control, the advanced Data Communications Control Procedure and Binary Synchronous. The F6856 can interface with most small computer systems with either 8-bit or 16-bit data bases.

Four 16-bit addressable registers within the F6856 can be user-programmed to specify the desired protocol as well as options within that protocol, according to Fairchild.

For 100-lot minimum quantities of the controller, the price is \$24.50 each for the 40-pin plastic current injection probe version and \$29.90 each for the ceramic side-brazed package.

Fairchild's MOS Products Group is at 101 Bernal Road, San Jose, Calif. 95119.

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# Intelligent Controller Built Into Remote Printer

ORLANDO, Fla. — A remote printing system with a built-in intelligent controller is available for service as a terminal attached to direct connect, multidrop or dial-up communications circuits.

The Transprinter from Transaction Data Systems, Inc. reportedly supports IBM's 2780/3780 bisynchronous protocols, Burroughs Corp.'s Select and Fast-Select protocols and the NCR Corp.

protocol.

The Transprinter runs on synchronous or asynchronous lines at "standard" speeds as fast as 9,600 bit/sec. Featuring a 63-char. set and 10 char./in. horizontal format, the printer

outputs 132 col/line at 300 line/min. Vertical format is either 3- or 6 line/in.

Full printing speed is achieved by use of a data compression algorithm executed by the host computer, a spokesman said. Print files are compressed prior to transmission, he explained, and the Transprinter's intelligent controller reproduces the data from those compressed records.

Options include upper and lower case character sets and different fonts, including those used for optical character recognition. Support for IBM's Synchronous Data Link Control and the X.25 international protocol is planned this fall.

Prices for the Transprinter start at \$12,750. Transaction Data Systems is located at 5750 Major Blvd., Orlando, Fla. 32805.

## Spectrum Allocator Revamped

WASHINGTON, D.C. — The Federal Communications Commission (FCC) has approved reorganization of its Office of Science and Technology (OST), which under the direction of the FCC Chief Scientist advises the commission on allocation of the electromagnetic frequency spectrum.

Spectrum allocation has become a problem for federal regulators because virtually all "parking places" in that portion of the spectrum reserved for satellite data communications are now allocated. A few companies are competing, through FCC regulations, for exclusive access to the last available U.S. parking place, an FCC commissioner announced recently [CW, Feb. 4].

### Reason for Revamping

Chief Scientist Stephen J. Lukasik said the reorganization of OST was designed "to improve planning, coordination and management of office functions." The revamped OST will have two deputy chiefs reporting to Lukasik — a deputy chief for policy and a deputy chief for technology — who will shoulder most of the top-level managerial responsibilities.

The policy deputy will administer spectrum allocations and various international activities, an FCC spokesman explained. The official will also direct policy formulation and oversee the effects of long-range planning.

The technology deputy will supervise planning from the technical standpoint and manage FCC involvement with equipment authorizations and standards-making as well as research and analysis activities.

The OST will have three new divisions: Authorization

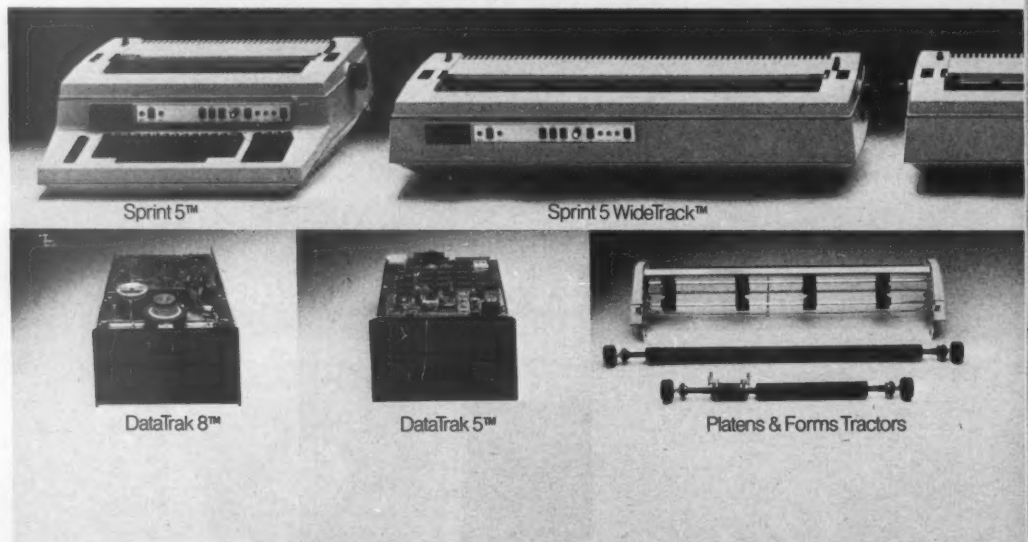
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# Rather Than Technology Regulation Seen Telecommunications' Impetus

By Jay Woodruff  
CW Staff

NEW YORK — The telecommunications industry is driven not by improved technology, but by economic changes based on current regulation and industry estimates of future regulation.

That is the view of Paul I. Bortz, a speaker at the recent Conference on Telecommuni-

cations and Productivity sponsored by New York University's Center for Science and Technology of the Graduate School of Public Administration. Bortz is a partner in the Denver-based research and consulting firm of Browne, Bortz and Codrington.

The industry is forced into inefficiency and assumes a

low profile in relation to government in order to position itself successfully for future regulatory changes. Both the producer and the consumer are forced to throw out mutually beneficial "economic theories of optimization," Bortz said.

The government's telecommunications policymakers would be able to produce few-

er and better policies if they anticipated the results of their decisions, he said.

Policymakers usually start off with simple and laudatory objectives such as "protection from abuses of power or efficient allocation and assignment of frequencies," according to Bortz. With time, however, the telecommunications industry moves to take advan-

tage of the regulations and often succeeds in using them to secure and protect a strong market position.

"The collection of such moves and countermoves by AT&T and its regulators has led us to the current paralysis in common carrier regulation that cries for a legislative new broom," he asserted.

The consultant said an interesting pattern in regulatory policy shows "regulation at first tends to keep out the challenger to the status quo. Eventually that new challenger is included within the barriers. Regulation then adopts a protective stance to keep out yet other new challengers."

## Unintended Results

Although telecommunications policy is supposed to motivate the development of services "which enhance the public welfare, results of policy are often unintended," Bortz said.

AT&T, for example, operating in what Bortz calls "telecommunications' most regulated sector," appears to derive both benefits and drawbacks from the regulation. Even though forced to separate data services from communications, AT&T and new competitors have largely succeeded in playing by the regulatory rules.

They would be adversely affected if the rules were changed, he said.

## Effective Policy

Policy can also have positive and straightforward effects, according to Bortz, who cited the "open skies" policy which led to the development of domestic satellite communications services. "That policy worked because it was simple," he said, and "simplicity in this case meant elegance."

Such policy is effective when the "markets are still fluid and undefined and policy is not so much an intervenor as it is a facilitator." But satellite services is a field where "we see the inevitable hardening of the arteries that seems to accompany policy activity over time," Bortz asserted, citing the federally chartered Com-

(Continued on Page 52)

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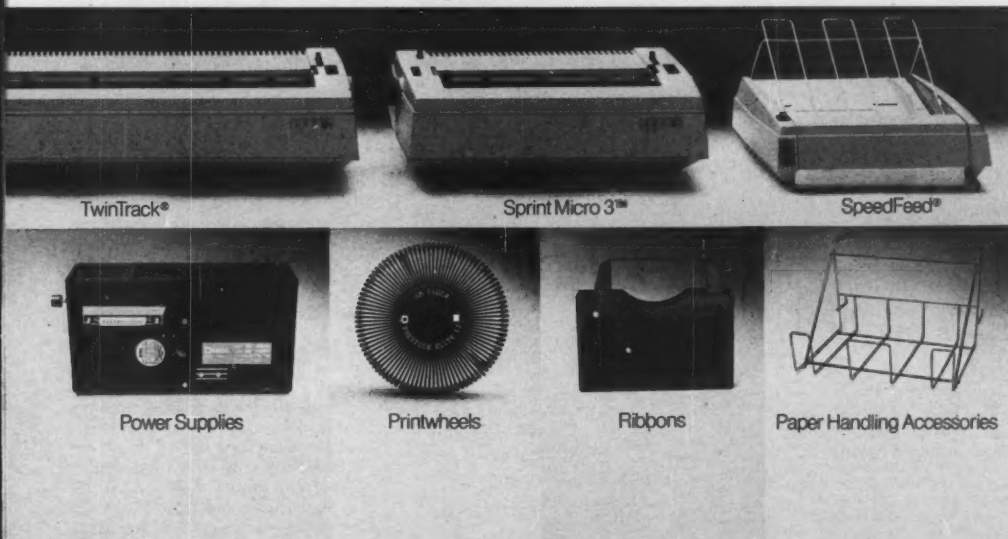
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# Communications Planners Seen Ignoring Cities

By Jay Woodruff  
CW Staff

NEW YORK — Current communication policies are being developed without consulting the communities that will be affected by them, according to Seymour Mandelbaum, a professor and chairman of the Doctoral Program and City and Regional Planning at the University of Pennsylvania.

Speaking at the recent Conference on Telecommunications and Productivity here at New York University, he said community members are usually excluded from the discussion of what system will best serve their needs and interests.

In a talk entitled "Hazards of Grand Policy: Communications and Urban Development," Mandelbaum focused

on the lack of interaction between "grand" planners, who have their own ideas of what a community requires for a useful telecommunications system, and the groups that will actually use it.

Specialists tend to develop a system mirroring their concepts of what they think is appropriate, he said. For example, they might decide to create an urban, centralized data acquisition system based on "high individual competence," even though the community might prefer a system where individuals can communicate directly with each other, he explained.

Such a situation can be avoided by having communities and "those who think about the information economy" talk to each other more often to deter-

mine what the community needs, not what information specialists think it needs, Mandelbaum suggested.

## Grass Roots Control

Another conference speaker, Elizabeth Young, president of the Public Service Satellite consortium, substantively agreed with Mandelbaum and urged that communications control be taken over, when possible, at the grass-roots level.

"Without attending to it," she warned, "we will surely lose control," which could fall to small, influential groups that may not have the public's best interests in mind.

Most of the public has only a surface understanding of the technology surrounding it, which could lead to fear

and superstition of those things it does not understand, Young stated.

Some communities have been able to understand technology well enough to make it useful to the widest possible group of users. Columbus, Ohio, for example, has been actively involved in controlling the growth of cable television in that city, she observed.

That city, which is best known for its innovative television system that allows interactive audience participation in on-air programs, has set up a citizens' advisory council to keep the control of the system in the hands of the largest number of people, according to Young.

Failure by the community itself to educate both parent, children and the rest of the community to the technology around them, and the uses to which it might be put, will cause that community to lose its authority over how it will use it, she said.

## Regulation Held As Driving Force

(Continued from Page 51)

munications Satellite Corp. (Comsat) as an example.

"At one time there quite likely was a need for Comsat, and there still may be a need in terms of a carrier's carrier internationally," he explained. But Comsat has diverted itself "substantially" from its charter and, like established common carriers and AT&T, "expresses fears of 'inhibitions or restraints' in its activities."

If policymakers based their decisions both on the current situation and anticipated reactions to it, "the uselessness of many policy moves would be apparent."

## Government and Competition

Bortz also criticized the government's enchantment with fostering competition for its own sake, explaining that when government tries to introduce competition into a heavily regulated market, the result is regulated competition, "the benefits of which are questionable."

Policy can motivate competition or inhibit it, he concluded. In some cases, however, motivating competition for its own sake may not provide any increase in productivity.

Policy has introduced competition with one hand, and with the other hand created new monopolies such as cellular telephone service and multi-point distribution service, Bortz said.

"Policy is a cost of doing business," the consultant said. Both an ally and adversary, policy is as important to the corporate perspective as the market itself and economics, he added.

## Line Transfer Module Handles Outages

SARASOTA, Fla. — A line transfer module that can switch automatically to a self-powered phone in the event of a private automatic branch exchange (PABX) power failure, has been introduced by Com Dev, Inc.

The 3030 plug-in circuit board connects to a maximum of six Central Office phone lines and costs \$75. Com Dev can be reached at P.O. Box 5336, Sarasota, Fla. 33579.

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For Intermediate-Size User

## STC Introduces Tape Subsystem Line

LOUISVILLE, Colo. — Storage Technology Corp. (STC) has introduced the 4500 tape subsystem — with eight models — for intermediate-size computer system users.

Previously most of the firm's products were aimed at larger computer users.

IBM 4300 users are among those targeted for the tape subsystem, STC said, adding that the tapes will be marketed as a backup to IBM 3310s and 3370s.

In terms of rated speeds, the units are comparable to the IBM 3420 models 4 and 6, but are about 20% less expensive than those units, the firm said.

### Disk Dumping

With microprocessor-based control units, a user can read 800-, 1,600- or 6,250 bit/in. tapes and write to any other drive any two densities, STC said. This means that in most cases 800 bit/in. tapes can be read in and translated to faster densities for reprocessing without an extra dual-density drive for conversion, STC said.

This should lead to greater productivity in dumping disks, the firm added, giving these examples: A 634M-byte disk (3350 or equivalent) can be dumped in 88 minutes onto a tape that is capable of 1,600 bit/in at 75 in./sec. With a 6,250 bit/in. tape, the process takes only 23 minutes.

At a speed of 125 in./sec. the same process takes 53 minutes at the 1,600 bit/in. density

Model	4530	4531	4534	4535	4550	4551	4554	4555
Unit Type	A	A	B	B	A	A	B	B
Tape Speed (IPS)	75	75	75	75	125	125	125	125
Recording	PE/GCR Tr1-D	PE/GCR Tr1-D	PE/GCR Tr1-D	PE/GCR Tr1-D	PE/GCR Tr1-D	PE/GCR Tr1-D	PE/GCR Tr1-D	PE/GCR Tr1-D
Data Rates (KB/sec)								
6250 bpi GCR	468	468	468	468	780	780	780	780
1600 bpi PE	120	120	120	120	200	200	200	200
800 bpi NRZI	-	60	-	60	-	100	-	100
Write Access Time (MS)								
Nominal								
GCR	2.23	2.23	2.23	2.23	1.30	1.30	1.30	1.30
PE	5.23	5.23	5.23	5.23	3.10	3.10	3.10	3.10
NRZI	5.23	5.23	5.23	5.23	3.10	3.10	3.10	3.10

### Features of the 4500 Tape Subsystem

and only 14 minutes at the 6,250 bit/in. density. With a density of 1,600 bit/in., 16 tape reels are needed compared with only five at the higher density, STC claimed.

### Remote Diagnostics

Another feature of the systems is remote diagnostic capability. Through an acoustic coupler the user can call up the remote center in Louisville and the system can be tested while it is running, STC said.

Up to 40% of the controller and all of the

drive can be checked out while the system is being used for production work, the firm claimed.

The units have only 23 cards, and the faults can be isolated through the remote diagnostics so that either the user can replace the cards or the field engineer can go to the site with the proper replacement cards in hand.

STC is at 2270 S. 88 St., Louisville, Colo. 80027.

## Bits & Pieces

### Machine Respires Forms For Use on Reverse Side

OKLAHOMA CITY, Okla. — A machine that respires computer forms so they can be used again on the reverse side has been developed by CFR International, Inc. here.

The CFR 1000 respicing machine, said to cut computer form costs by up to 78% per year, was designed for one-part (no carbon) computer forms. The splicing process utilizes special perforated tape that matches the burst resistance of the original perforated paper.

The machine, about the size of a copying machine, can be operated by regular office personnel, a company spokesman said. The process entails regathering burst one-part reports, culling damaged sheets and respicing

ing them into full, 3,000-sheet boxes ready to use on the back side.

Available in the San Diego area is a service based on the machine that features pickup and delivery of the forms for respicing, for 50% of the original cost of the paper.

While the firm is presently making some major marketing decisions which may or may not result in expansion of such service centers, users can purchase the machine for \$9,200 from CFR at 1901 Classen Blvd., Oklahoma City, Okla. 73106.

### Order-Entry System 'Talks' With 32-Word Vocabulary

ST. LOUIS, Mo. — Interface Technology, Inc. has developed a talking computer system with a basic 32-word vocabulary called Touch-Talk Order Entry (Toes).

Toes enables customers and salespeople to enter orders by telephone into a home office computer from anywhere at anytime, a company spokesman said.

The system interfaces directly to an IBM Series/1. A basic configuration includes four phone lines and a vocabulary of 32 words.

Prices start at \$50,000 for the basic system, including software and the Series/1, and go up to \$65,000. A system with eight phone lines costs \$58,000.

The manufacturer provides on-site training and prepares a manual for each system installed, the spokesman said.

Delivery is 90 to 120 days, depending on individual vocabulary requirements, the manufacturer said from 10500 Kahlmeyer Drive, St. Louis, Mo. 63132.

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## Creates Regional 'Profit Centers'

## DDP Strategy Aids Canadian Firm's Cash Flow

MONTREAL — A DDP strategy based on the use of several small business computers for on-line, distributed data processing (DDP) is bringing a company here an improved cash flow, faster customer response and a cost-center structure that better reflects the company's geographical situation.

Domtar, Inc., a large, diversified manufacturing concern, installed the first of the com-

puters — which is linked to a large mainframe for batch processing — in November 1977.

"We have not only improved our cash flow and ability to respond to our customers," according to Robin Wheeler, DP manager of the Construction Materials Division, "but our overall success — even though only one of the computers has been installed — has had a profound impact on the way

the company sees itself and carries on its business."

The division, which operates coast-to-coast, manufactures basic products for the housing industry, such as roofing, sheathing, bricks, wallboard, ceiling tiles, plastic laminates and insulation.

Before the installation of the Hewlett-Packard Co. HP 3000, the division relied on a series of batch systems that massaged manually collected data. After the necessary reports were generated by the mainframe, they would be mailed to the various operating locations.

"But these systems gave us little operating information," Wheeler recalled, "and it was frequently too late to do us much good. We were unable to respond quickly to customer demands for our products, and we had a poor handle on operating requirements."

In 1975, the company started looking for a more efficient way to process data. While the corporate office ran benchmarks on a wide range of computers, the construction division did an in-depth study of its business requirements.

## DP Participation

"We wanted to get reliable computer power into the mainstream of our business," Wheeler noted. "Our data was being processed six to eight weeks after the fact."

"We realized that in order to get sound, timely data, the DP department would have to participate in the business of doing business. That is, we would have to become an integral part of taking orders, controlling inventory and so on."

"The key advantages of this participatory approach," he added, "are that the labor content of these jobs drops significantly and the management information collected reflects the actual business activity as it happens."

In the process of its study, the division realized that because of the geographical dispersion of the Canadian market — the fact that traffic moved mainly east to west in a 100-mile band — it would be necessary to come to grips with the problem of communication.

## Three Regional Computers

Instead of using a central computer with communications lines tying the various plants together, the division decided to use three regional computers — in Montreal, Toronto and Calgary.

"Each of these locations," the DP manager explained, "represents the center point of an economic zone. Most of the plants in these locations serve

only that region, with little crossover."

"Our intention was to create economic business units and treat each as a profit center. We realized that this approach would reduce communication costs, ensure data availability and security and give us the ability to expand easily."

In line with this strategy, the division knew that it needed computers with good communication capabilities and that is one of the reasons the company decided on the HP 3000, according to Wheeler.

"The system's DS 3000 software," he said, "allows the operator at one site to act as an operator at another site and to link and trade data from site to site."

The division confirmed this capability by running tests between the Montreal headquarters and HP installations in Pointe Claire and Toronto.

Ease of use was also important in the division's decision to go to the new system, Wheeler noted.

"We don't need software and hardware experts to run the computer," he stated. "And the Image data base management software and the Query facility make it possible to get to fundamental data quickly."

The division currently has an HP 3000 Series II with 512K bytes of internal memory. The system is configured with two 50M byte disks, a 250-line/min printer, a 1,600 bit/in. tape and 17 CRT terminals.

It is linked to an IBM 370/145 with 1M byte of memory, nine disk drives, five tape drives and a high-speed printer. Two CRT terminals are reserved for developmental work.

## Applications in Use

The applications that are now up and running on the HP 3000 are on-line order processing, invoicing and receivables.

Before the new computer was installed, order processing

was a lengthy process. Orders were recorded on paper tape in the sales office and Telexed to the plants. The plants and the sales offices would forward their copies of the order to the headquarters here for pricing.

The tape would then be run through a piece of hardware to produce invoices. Simultaneously, the hardware would produce magnetic tapes for batch processing of statistics. Under this system, it would take from five to 15 days to process and invoice an order after it was shipped.

Under the new system, it takes less than a day to print and mail the invoices. "In fact," Wheeler claimed, "because of faster invoicing and the ability to get our invoices to our customers before their month's end cutoff dates, at the end of the first month the system was live — August 1978 — we improved our cash flow situation by half a million dollars in Montreal alone."

In addition, the new system ensures that credit limits are adhered to. If a customer exceeds his credit limit on a particular order, the order is automatically flagged and sent to the credit department for a final decision before being sent on to the plant.

Based on the order entry application alone, the return on investment on the HP 3000 is now projected to be 48%. "The system is already paying for itself, and other applications will be gravy," Wheeler says.

The DP manager calls his vision of the division's future "controlled decentralization," a situation in which each region will have the authority, information and ability to take action in many business areas, such as creating invoices.

At the same time, the headquarters in Montreal will monitor these activities with regard to their overall cost-effectiveness. Detailed monitoring data will go from the regional computers to the IBM 370.

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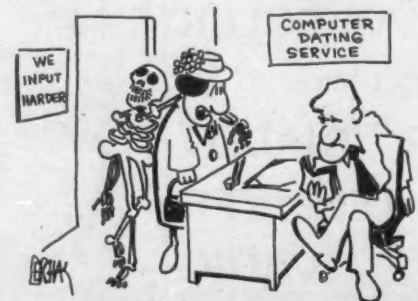
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'About My Computer Date...'

## Process Control System Aids Plant's Energy Conservation

BAYTOWN, Texas — A computerized process control system is helping the country's newest petrochemical plant save energy equivalent to the amount needed to heat 150,000 homes in a Midwest city for a full winter.

Tailored to the plant's specifications for a two-year period by engineers from Honeywell, Inc. and Exxon Chemical USA, the Honeywell-based system saves three trillion British thermal units (BTU) each year, according to S.W. Dedman, manager of the Baytown olefins plants.

The \$500 million plant manufactures basic chemicals known as olefins that are in turn used to make plastics, synthetic rubber, solvents and other chemical specialties.

Much of the plant's energy conservation results from recovering heat used in the manufacturing processes and from more precise control over the process operation itself, Dedman said.

Running under Honeywell's PMX software, four Honeywell 4500 computers are interconnected through a shared memory, each actually having 80K bytes and sharing 176K bytes with the other three, according to Ulen Jackson, the process control section supervisor.

Honeywell's TDC 2000 Process Control System comprises digital instrumentation with which the computer system interfaces to control the plant.

The Honeywell equipment and software works to pinpoint control of the myriad of interacting concurrent and sequential product manufacturing functions to achieve and maintain pressures and temperatures within ultranarrow operating ranges, Dedman explained.

### Recycling Furnace Heat

Besides controlling the process operation itself, recovery of manufacturing heat results in as much as 75% of furnace heat — which otherwise would go up the stacks — being incorporated into secondary process functions.

For example, "saved" energy is now employed to heat distillation towers and generate additional steam. In addition, a water-quench system cools furnace effluents by direct contact of gases with water, he added.

About 25% of the heat that would normally be dissipated into the atmosphere is now recovered to heat other production processes. The new plant is also equipped to produce steam at higher than normal pressure, saving an estimated one-third trillion BTUs annually.

The control system — through more than 6,000 field inputs — monitors the flows, temperatures, pressures and other operating variables throughout the entire plant, Dedman noted.

All of this information is graphically and digitally displayed on color CRT screens in the control room — with two CRTs at each of five operator consoles. If anything operates at less than maximum efficiency, the control room technician inputs the desired operating point on his process computer keyboard.

The computer then takes over and makes the actual adjustments in one or more of the 1,000 control loops throughout the plant's control system. The computer automatically makes the

precise adjustments in the various interacting functions to achieve desired operating points.

"In effect, the computer allows the plant's operator to concentrate on attaining maximum energy efficiency, environmental protection and product yield while the computer calculates and makes the numerous necessary adjustments in lower level operations," Dedman said.

As a result of the new control system, the Baytown olefins plant will produce 2.7 billion pounds of product annually with 15% less fuel consumption than a similar facility designed prior to the 1973 oil embargo, Dedman said.



Modern central control room at Exxon's olefins plant at Baytown, Texas, where a Process Control System helps save three trillion BTUs in energy each year.

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# Boston Fire Fighters Blaze DP-Mapped Trails

By Jay Woodruff

CW Staff

**BOSTON** — The fire department here has begun using a computer to map out and print rapid response routes to locations in the city.

For every location in the city, the Boston Fire Department can determine which fire companies are to respond to a call and how to cover those companies that leave their neighborhoods to answer calls in other areas, according to John Murphy, superintendent of Boston's fire alarm division.

The system, run on an IBM 370/145 located in City Hall, has resulted in far fewer errors than the preceding system, which was in use for 30 years, Murphy said.

"The errors we had involved having those companies that were not supposed to go, go to the fire, while those that were supposed to go did not respond," Murphy said. This happened because the list of companies which were to respond to a fire at a given location were not always written in the correct order, showing the department's ability to respond.

## Seminars Start On Data Entry

**SANTA ANA, Calif.** — Data Entry Digest will present seminars on increasing productivity and reducing costs in data entry starting today through March 5 in Edison, N.J., in Anaheim, Calif., March 17-19 and in Chicago, May 19-21.

Workshops on effective communication, counseling techniques, developing standards, selecting successful operators and developing nonmonetary incentives will be discussed. A classroom guidebook will be provided, as well as other reference materials.

The fee for the three-day seminars is \$495, with a 10% discount when three or more persons from the same organization apply at the same time. More information is available from Data Entry Digest, 10522 Ridgeway Drive, Santa Ana, Calif. 92705.

## Microfilm Guide Free

**ROCHESTER, N.Y.** — "Microimage Processing and Transaction Retrieval for the Financial Industry" is an 18-page booklet free from the Eastman Kodak Co. that discusses the ways the banking industry can integrate microfilm into operations.

Copies of the booklet, Kodak Publication No. A-1900, are available from Department DP09017, Business Systems Markets Division, Eastman Kodak Co., 343 State St., Rochester, N.Y. 14650.

The system was most prone to breaking down in the event of multiple-alarm fires, where a number of companies would be pulled off their regular area assignments and their assignments taken by nearby companies.

### Schedule Changes

Any changes that took place in the equipment or personnel that would alter its ability to respond meant an overall schedule change and a resulting delay while new schedules were sent off for typesetting and printing.

Now the IBM 370/145 and an associated printer make it easy to change a schedule and distribute it in about 48 hours, Murphy said.

Schedules are drawn up and printed from a master file of all the fireboxes in the city as well as the "phantom

boxes" that are placed on the map to designate every street corner location in the city.

### Color CRT System

But while the present system has helped the fire department improve the manner in which it gets personnel and equipment to a fire, the department eventually plans to acquire an on-line dispatch system incorporating color CRT terminals.

The department is testing a stand-alone CRT terminal from Intelligent Systems Corp., operating in Basic and providing file control, Murphy said. The system has served a twofold purpose — to see if it can outperform black-and-white CRT terminals and to see if it is accepted by department personnel.

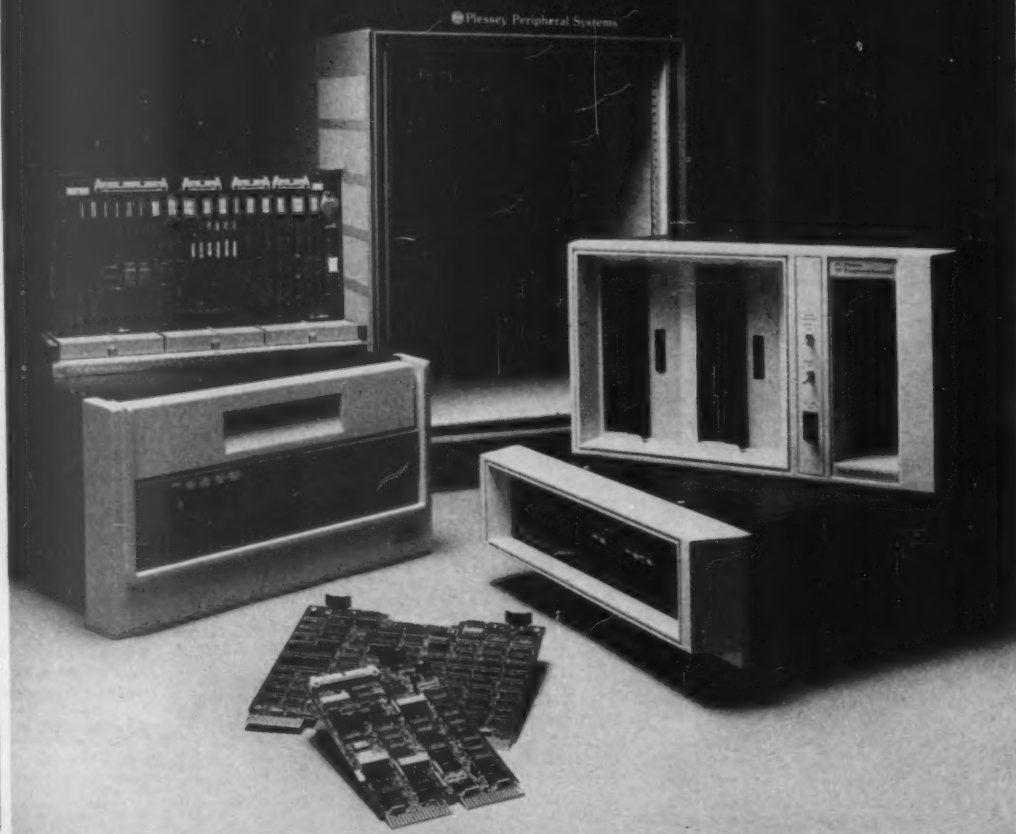
"We'll go to a CRT system eventually, and we think the color is much better for recognizing changes in the system," the superintendent said. Each location displayed on the CRT includes access time to that location.

But to put together a system that ties together all the stations in the city may be a long way off, and not only because of its cost. For one thing, it is difficult to find software that can handle on-line the amount of equipment used by the city and determine how to schedule the fire companies to cover the Boston metropolitan area.

On-line dispatch systems will find their way into small cities first because it is easier to design a system that will juggle fewer pieces of equipment over fewer locations, the superintendent suggested.

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## Terminals Link Test, Care Areas Hospital Cuts Lab, X-Ray Reporting Time

NEW ORLEANS — A computer system at Touro Infirmary here links the hospital's Ambulatory Treatment Center (ATC), recovery room and intensive care unit to the lab and radiology department to transmit test and x-ray results quickly to waiting doctors and nurses.

This fast transmission of results means patients can be cared for and treated without needless delay, J.L. Buckingham, Touro's executive director, said.

The ATC, recovery room and intensive care unit are linked to the lab and radiology department by terminals tied into the hospital's IBM 370/138 computer.

This direct link eliminates the need for doctors or nurses to phone for information they need or to transcribe information by hand if the lab or radiology department should phone them.

Instead, the results of a blood test, for example, are sent over the computer network to one of three terminals located in patient treatment areas. Once test results are received, the doctor or nurse needing the information can check on the patient's condition and administer any necessary treatment as indicated.

Activity in Touro's ATC — which is responsible for both emergency and outpatient care — is fast-paced, with

over 140 patients receiving treatment daily.

Eliminating the need of going to the phone for test results or waiting for a delivery from a courier, and receiving them instead over a computer terminal is a significant time and money saver, Dr. Jeanne Devron, emergency room director, said.

More important, speedy transmission of diagnostic results can save lives in critical cases, she added.

"This is a much faster reporting system. Before we had this system we would spend a lot of time transcribing test results that had been phoned to us. Or we'd have to phone the lab or radiology department to find out what



Patients' blood test results are transmitted directly by an IBM 370 from Touro Infirmary's lab to waiting nurses in the hospital's recovery room.

we needed to know. "Also, not having to transcribe anything by hand is more than just a time-saver — it also eliminates the possibility of someone making an error in writing down the information," Devron noted.

The automatic transmission of results has been a great help to doctors making their morning rounds, according to Mary Lou Mayfield, who, as associate head of nursing, oversees the operation of the intensive care and recovery room.

Doctors frequently visit patients before 7 a.m., when surgery is often scheduled. Having computer printouts of various test results waiting in the morning means any treatment or additional care their patients might require can be prescribed before the doctors go into surgery.

Before the new system was installed, Mayfield added, doctors sometimes had to be interrupted during an operation if results came back from the lab needing their immediate attention.

The computer network also eliminates the need for any of the nursing staff to "bird-dog" progress on tests. As soon as results are available, Mayfield said, they are immediately sent out over the computer.

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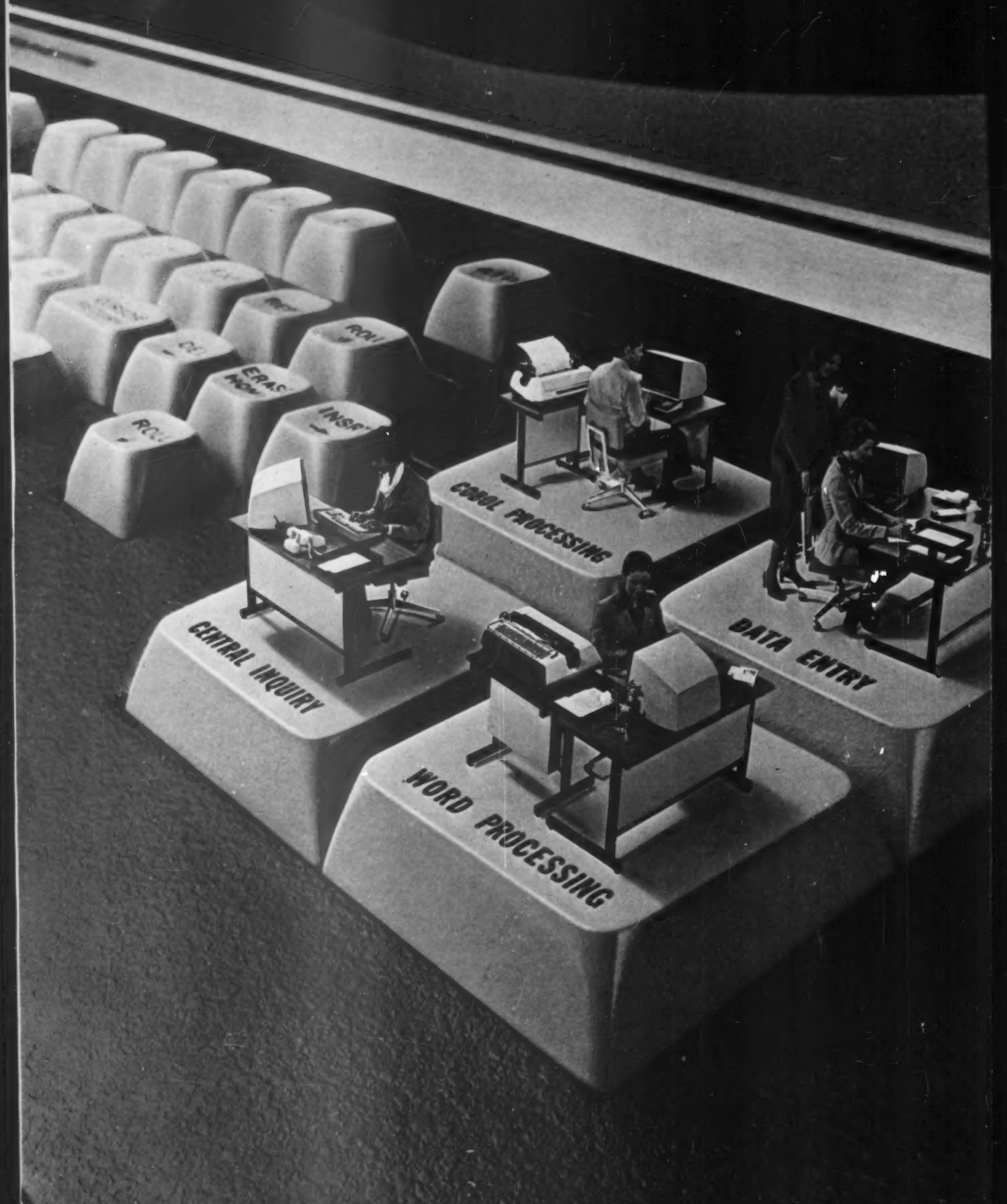
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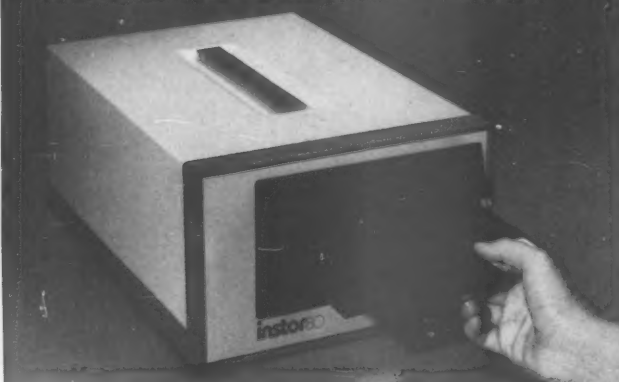
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Resteyne Wilkinson, computer operations manager, operates the NCR 643-118 COM recorder/processor.

## COM Gives Daily Updates Of State Job Bank Listings

By Marguerite Zientara  
CW Staff

RALEIGH, N.C. — A computer- and microfiche-based employment information storage system here allows the North Carolina State Employment Security Commission (ESC) to maintain up-to-date job data in several far-flung offices throughout the state.

The system, established in 1971 to centralize job listings, makes use of an NCR Corp. 643-118 computer output microfiche (COM) recorder/processor that generates about 4,000 original microfiche each month.

About 1,500 of the fiche contain job-opening information, while about 500 are used to reproduce unemployment insurance registers. The remainder are produced for other state agencies, according to Bill Lewis, ESC's information systems director.

The ESC's system begins in 54 field offices where information on job openings is keyed into intelligent data entry terminals and stored on diskettes. Data includes job description, qualifications and salary information.

Each day the data, representing about 12,000 transactions, is transmitted via dial-up communications to the central processing facility in a format readable by the agency's Univac 1100/21 mainframe.

### Job Bank Update

The data is then used to update the Job Bank system. Referrals and placements are posted against outstanding job openings, Lewis explained.

"As a function of that update, a tape is produced containing the job information received that day as well as data on jobs listed in previous days and not yet filled," J.M. Babb, systems analyst, said. "The Job Bank is archival in that it contains a history of job openings."

The product of the update, a character print-line tape, is then mounted on the NCR COM recorder/processor to generate about 50 original microfiche. These microfiche are index-card-size sheets of film, each of which can hold the equivalent of about 200 pages of computer printout.

"Since the COM system has 32,000

characters of programmable memory, it can accept input data in virtually any format," Babb noted.

The COM system images information on a wet-process silver film. Programs are designed to instruct the machine whether or not to use form slides.

The slide most frequently used prints lines between the rows or columns of job data. The film is processed internally and ejected completely dry.

### Duplicate Microfiche

Fifty duplicate microfiche are created from each original. The resulting 2,500 microfiche are then taken immediately by courier to field offices for use the next morning.

"Originating and duplicating microfiche is a crucial function of the ESC," according to John Fleming, ESC's employment services director. "It allows the agency to rapidly distribute statewide job-opening information, aiding both potential employees and employers throughout North Carolina."

Efficient and rapid production of the microfiche is essential, since field offices are scattered within a 250-mile radius of Raleigh. Using microfiche, two offices 500 miles apart can exchange information daily, receiving it no later than the next business day after the job opens.

Job openings are usually filled within several days. A considerable number of professional jobs are entered into the system statewide because it is more difficult to find people for these jobs.

"For some types of lesser-skilled jobs, we only route microfiche to surrounding areas, and not statewide," Fleming noted. "Distribution of the information depends on the opening's significance to a given labor pool."

As for the benefits of the system, "It is very hard to put a dollar value on certain government services," Fleming said. "But we felt it was very important to distribute job information more quickly. It would have been physically impossible to produce and distribute the truckload of paper that would have been required each night as an alternative."

# TRANSBORDER DATA FLOW

## Concerns in Privacy Protection and Free Flow of Information

Steady growth in the volume of transborder data flows and continuing imbalances in the directions of these flows are adding fuel to the transborder data flow (TDF) debate. The importance and potential effects of outflows of data to be processed abroad in foreign computer systems as well as inflows of information products have increased to the point where countries are beginning to create policies for regulating TDF in order to avert various perceived negative economic, political, societal and cultural effects. A recent report on telecommunications and Canadian sovereignty<sup>1</sup> illustrates this vividly. Regarding TDF, the report recommended that the Canadian government "act immediately to regulate transborder data flows to ensure that we do not lose control of information vital to the maintenance of national sovereignty."

This report also noted that the value of computing services imported into Canada in 1978 was in the \$300 million to \$350 million range and that by 1985 this value is expected to increase to \$1.5 billion. By that time, it is estimated that some 23,000 jobs in the data processing industry will be lost to Canadians because of DP performed in the U.S.

On the other side of the Atlantic, the Nora-Minc report to the president of France<sup>2</sup> recommended that France use "the power of the decree" to gain greater self-sufficiency and reduce its dependence on foreign DP.

Similar concerns have been expressed by other countries that are principal users of foreign DP services and/or are major locations for subsidiaries of foreign multinational corporations. From a combined economic and political perspective, the question is raised as to who really controls exported data and the processing performed on it. Nominally, owners of the data have the management and retrieval rights, but control over the processing facili-

ties — and hence also the data located in them — rests with the service suppliers and the governments where the processing facilities are located. Many countries are asking themselves whether control by foreign entities over such increasingly vital services and data impinges on their national sovereignty.

### Third World Concerns

Similar concerns arise in importation of technical information and "media products" as, again, flows are imbalanced. Only a few developed countries, led by the U.S., are the major exporters to other industrialized countries and to the less industrialized Third World countries. Figure 1 (on In Depth/2) illustrates the nature of Third World TDF concerns.

Transfer of technical information has become a rapidly growing and important international phenomenon. Massive amounts of technical knowledge are transferred between countries through foreign aid programs, military assistance, foreign student exchange and cooperative scientific research programs; by way of commercial and governmental data base and information retrieval services; and as an adjunct of sales of "high-technology" products (such as for training and operation-oriented education).

International trade in "media products" (television programming, newspapers, magazines, films and news services) has increased in step with the rise of world literacy and the associated increase in mass media availability and affordability. Media products from foreign countries are filling the airwaves and newsstands of less developed countries. They compete on the economic level with fledgling local media products industries and on the political level with governments (which often control the local media). In the process, they introduce cultural values

(Continued on In Depth/2)



The American Federation of Information Processing Societies (Afips) Panel on Transborder Data Flow was established in January 1978 to respond to requests for comments on position papers and proposals developed by federal agencies dealing with the TDF problem.

The problem to be addressed was the growing international controversy over the possibility that, in several countries, governmental restrictions might be placed on transfers of data for processing and storage in foreign computer systems.

By the end of 1978, the panel had produced several short working papers. The panel subsequently decided to produce a more comprehensive study of the problems and issues involved. The report from which this chapter is drawn is the product of that effort.

The two-volume report was published by the Washington office of Afips at Suite 805, 1815 North Lynn St., Arlington, Va. 22209. The report was edited by the panel chairman, Dr. Rein Turn of California State University, Northridge, Calif.

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Panel on Transborder Data Flow  
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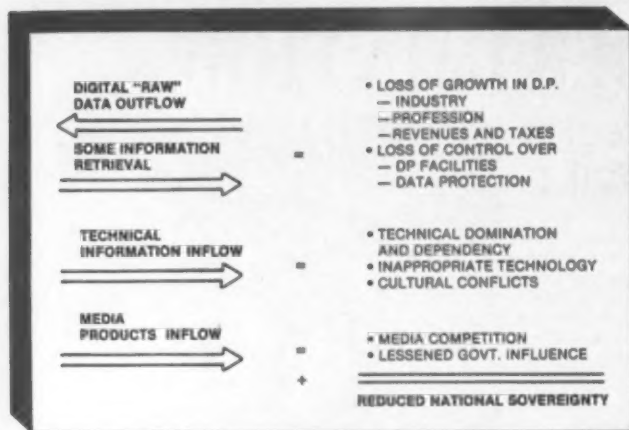
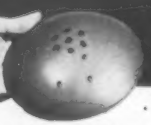


Figure 1. Perspective of Informatics Dependents



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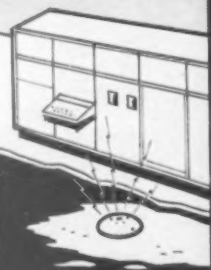
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(Continued from In Depth/1)  
and perspectives that frequently conflict with those traditionally held in the importing country.

Importation of technical information, information products and DP services is increasing because this is easier and less costly than developing local capabilities. However, the result may be increased technical and economic dependence. Foreign technology is also likely to be imbued with a cultural bias that reflects the exporting country's cultural, social, economic and intellectual traditions and institutions. Its adoption can create societal and cultural conflicts that may result in serious disruptions in the cultural and social order of the importing country.

### Information Industries

A basic concern in countries that currently depend heavily on foreign DP services is that the development of domestic information processing industries is weakened by the loss of processing business to foreign vendors. Governments of these countries are likely to favor TDF restrictions. On the other hand, countries that predominantly import data for processing (that is, provide DP services in other countries) are seeking to maintain unrestricted transborder data flows to maintain their advantageous position.

Some countries may pursue both restrictive and permissive TDF policies at the same time, since they are effectively data-importing countries and data-exporting countries at the same time. For example, a European country may be the dominant partner in DP trade relationships with certain Third World countries and thus favor the status quo in TDF, but may also be a dominated partner in a DP trade rela-

tionship with the U.S. and thus favor a change.

Imbalanced data flows have already caused some data-exporting countries, particularly in the Third World, to adopt policies to restrain data outflows and to favor domestic or cooperatively developed regional DP telecommunications or media products industries. Even some European countries that already have well-developed domestic DP industries are considering cooperative regional developments (for example, through the European Economic Community) and are coordinating the related legal and regulatory policies, such as data protection in the Council of Europe and telecommunications tariffs in the Conference Européenne des Administrations des Postes et des Télécommunications (Cept) in Brussels, Belgium.

The trend in foreign countries toward government-directed development of DP and information industries and promulgation of related regulatory policies is contrasted by the U.S. approach. Policy formulation in the U.S. is pluralistic and market-driven - determined decentrally and competitively. The following quote from a statement by Henry Geller, Assistant Secretary of Commerce for Communications and Information and administrator of the National Telecommunications and Information Administration (NTIA), expresses the principles traditional in the U.S.: "Reliance on competitive and the private sector whenever feasible, rather than on government regulation or intervention; rational cost-based telecommunications tariff and rate structures which are based on publicly available data and which seek to avoid subsidies or, where they [subsidies] are deemed to be in the public interest, to make them explicit." Figure 2 illustrates the communications policy aspects of the TDF debate.

### Status Quo Threatened

It is apparent from this brief look at international information policy issues that the status quo in transborder data flows is seriously threatened. U.S. information policies and traditions are challenged by legislative actions in data protection in several European countries, actual or proposed changes in telecommunications tariffs in many First World countries and regulations and restrictions on foreign-based industries operating in the Third World. In addition, proposals are pending throughout the world to levy new duties or taxes on transborder data flows, imported data processing equipment and DP services from abroad.

Within the described general context, the international debate on TDF policies has emerged from a complex interaction of several policy areas. Several approaches can be taken for their presentation and analysis. In this article, international data transfer and information policy arenas are grouped into two categories: (1) those arising primarily from conflicts among First World countries (presently the U.S. vs. virtually the rest of the industrial-

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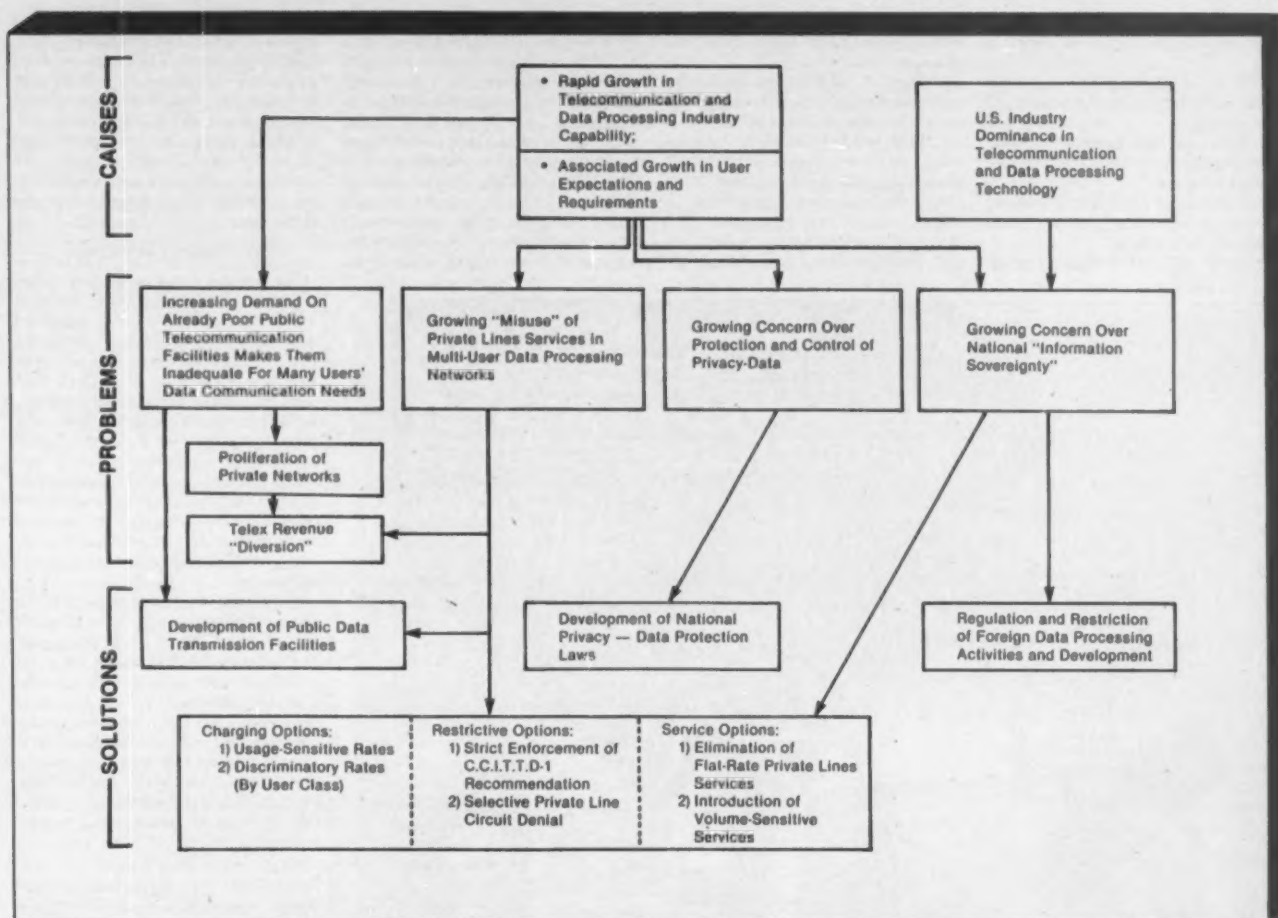


Figure 2. Foreign PTTs' Perspective of Causes, Problems and Solutions in the TDF Area

ized world) and (2) those arising primarily from conflicts between industrial countries of the First World and those of the developing countries of the Third World. (The First World and Third World categorizations are used here because of their common use in international studies, discussions and analyses; no other meanings are intended.)

Data protection policy, telecommunications policy and DP economics are the key areas in the TDF debate among most of the highly industrialized First World countries. Figure 3 illustrates these relationships.

#### Privacy Protection Policy

Since the early 1970s, an increasing number of privacy protection laws and regulations have been enacted in industrial countries to control the collection, use, dissemination and transmission abroad of personal data about individuals. The focus is on personal data that is maintained in DP systems. Privacy protection laws are motivated by concerns that arose in the 1960s over erosion of individual privacy and other rights as a result of growing automation of personal records. These concerns are still valid and they include the following:

1. Automation of record-keeping systems is on the increase, as is their use in making decisions about individuals and their potential impacts on the modern society.

2. DP systems and data in them are subject to misuse, and they are vulnerable to various threats.

3. Much of the personal data collected may lack relevance to the purposes for which it is to be used, and its quality (including accuracy, completeness and currency) may be unacceptably low.

A recent public opinion poll in the U.S. showed that these concerns are increasing. For example, more than 64% of the respondents felt that automated record-keeping operations pose a threat to personal privacy, and more than 50% were concerned about the use of personal information about them by the government and private business. Responding to these concerns, the U.S., Canada and several European countries have enacted privacy protection/data protection legislation. In this context, privacy protection refers to a set of rights that individuals can claim under law vis-a-vis the collection, storage, processing, use and dissemination of personal data about

themselves in record-keeping systems; data protection has a somewhat broader scope.

Because of differing perceptions of

the problems and differing political and legal systems and traditions, existing privacy protection laws tend to ex-

(Continued on In Depth/4)

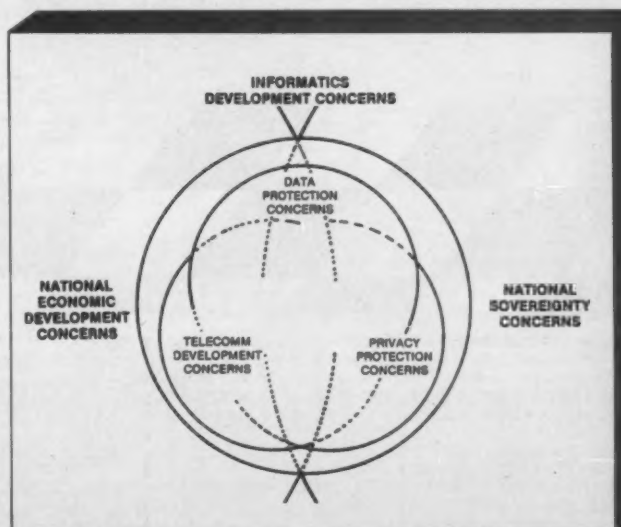


Figure 3. Relations of Data Protection and Telecommunications Policy Trends in the First World

## IN DEPTH

(Continued from In Depth/3)  
hibit considerable variations concerning:

1. **Scope of applicability:** the public sector only or both the public and private sectors.
2. **Types of data subjects covered:** natural persons only or natural as well as legal persons.
3. **Types of record-keeping systems covered:** automated or both automated and manual systems.
4. **Types of data categories given**

**special confidentiality or privileged status** (political preference, racial, religious, medical and so forth).

5. **Type of enforcement mechanism** (such as regulatory commissions or enforcement through court action).

6. **TDF restrictions:** explicit or implicit: whether comparable protection in receiving country is required.

Such variations have caused considerable concern among organizations facing obligations under these laws, such as multinational corporations, in-

ternational DP services vendors and other businesses engaged in international trade. The problem of having to interpret, implement and comply with data protection laws and associated requirements in the various "home countries" is compounded when transborder transfers of protected data take place. (In this article, "home country" designates the country of an individual whose privacy is to be protected by a data protection law; "host country" designates the country in which an in-

formation processing system is located which processes foreign data.)

For example, which country's laws apply when processing and storage functions are distributed throughout several countries? If the privacy protection laws in a host country do not protect certain classes of data, will contractual protection be acceptable to the data protection authorities of the home country?

### Problems for U.S. Firms

The last question is of particular importance to those organizations that may wish to process or store protected data in the U.S. To date, the European approach to data protection has been to create "omnibus" data protection laws that apply broadly to all organizations in the public and private sectors. In contrast, the U.S. has adopted a "sectoral" approach in which custom-tailored privacy protection and fair information practices laws are targeted at particular parts of the public or private sectors (such as health, consumer credit, insurance or criminal justice).

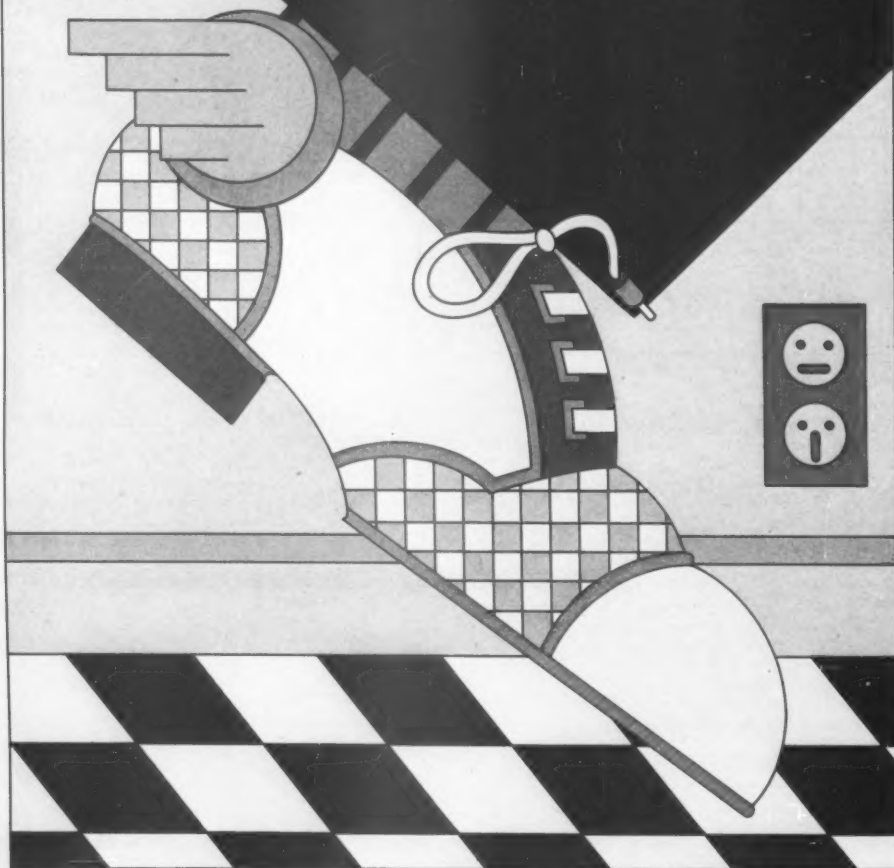
Because the latter process is relatively slow and since gaps in protection still exist, rigidly applied TDF restrictions in European data protection laws can prohibit certain data transfers to the U.S. This prospect has led to strong protestations by U.S.-based DP enterprises as well as by multinational corporations in the U.S. that TDF restrictions are not necessary for protecting personal data but instead serve an ulterior objective to reduce U.S. competition in the European DP market<sup>16</sup>.

Whatever the true reasons for proposed TDF restrictions, privacy protection continues to remain an explicit focus for data protection activities in most of the First World countries. The undesirability of significant differences in these laws is recognized by these countries, and harmonization efforts are progressing in several international fora. Thus, the Council of Europe (COE) has drafted a Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data, which will have the force of law for signatory countries, but membership will be voluntary. Twenty-one European countries are eligible; others will be invited.

The Organization for Economic Cooperation and Development (OECD), on the other hand, having a less homogeneous group of members (Canada, the U.S., Japan, Australia and New Zealand are the principal non-European members), a number of which have yet to develop privacy legislation, favors a set of voluntary guidelines on privacy protection.

Both of these projects, the COE Draft Convention and the OECD guidelines, are similar in the principles of privacy protection espoused. The guidelines are broader in scope, however, in that they are not restricted to covering automated record-keeping systems only, as is the COE Draft Convention. Both documents acknowledge a need for continued free flow of information

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## IN DEPTH

and emphasize the need to avoid unjustified nontariff barriers "in the way of economic, commercial, cultural and scientific links between peoples."

On the other hand, both documents permit countries to adopt measures that provide additional protection to the data subjects. For example, they may extend coverage to legal persons (corporations and other entities which are persons in the eyes of the law) as well as to physical persons, as has been done in the data protection laws enacted in Norway, Austria and Luxembourg.

These prospects worry some U.S. business organizations engaged in international trade. They tend to see protectionist policies as the true rationale for data protection laws in Europe. Their concerns were heightened by recent proposals in Canada and in Europe for extending data protection to cover such politically or economically sensitive data as information about natural resource reserves and development plans, government operations and budgets, planning and operations of government-owned or -supported industries and data about unemployment.

Indeed, it seems quite reasonable to assume that, as their domestic information industries' capabilities increase government will restrict storage and processing of sensitive data to their own territories, to be performed by domestic DP organizations. From this point of view, the concerns in the U.S. appear to be well-justified.

#### Telecommunications Policies

The second group of policy issues affecting the TDF debate concerns the development, diversity, sophistication, permissible uses, pricing and control of telecommunications services used in international computer communications systems and remote computing service networks. Generally, in all countries except the U.S. and Canada, the national government provides and controls telecommunications facilities and services through its postal, telephone and telegraph administration (PTT). By and large, PTTs are responsible for generating their own revenues (mainly from telecommunications, which often must also subsidize the postal services). Thus, they are intensely concerned about maintaining and, whenever possible, expanding revenues from telecommunications services.

Since the 1960s, the vast proliferation of private leased-line networks has alarmed most of the PTTs. Since they were unable or unwilling to develop adequate public data communications services, the PTTs leased private lines to national and international enterprises wishing to build their own private data communications networks. By paying flat monthly rates for lines, interconnecting them with private switching equipment and developing sophisticated "value-added" features, the private data networks established a more reliable, flexibly controlled and cost-effective service than

the public switched telephone network (PSTN) and Telex alternatives.

As the private networks grew, provided added services and carried more traffic, the PTTs began to perceive problems:

- A potential loss of revenues from the two most profitable public services, Telex and PSTN, as a result of the diversion of traffic onto the more economical private networks.
- Lack of control over multiple-user networks which may permit, or cannot

easily control, direct terminal-to-terminal communications or message switching in violation of leased-line tariffs and international agreements of the Consultative Committee for International Telephone and Telegraph (CCITT).

- Difficulties in telecommunications facilities planning.

The latter is a highly problematic, esoteric and inexact discipline even under the best of circumstances and is greatly complicated by the existence of

private networks (with private plans, time schedules and so on.)

In order to reduce such problems and regain control of the data communications marketplace in their countries, some PTTs appear to have evolved a two-part strategy. One part involves the development of public data communications networks that could offer services similar to those of private data networks, but which would charge for services on a data volume basis, thus

(Continued on In Depth/8)

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*Willfried Muller, VAX System Manager  
Institute of Nuclear Medicine  
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Willfried Muller, VAX System Manager, tells why they decided on Digital's VAX-11/780: "We needed a machine that would not only process images quickly, but also help us develop new programs for our applications. In both areas, VAX seemed to be ideal."

VAX's accessibility was also critical: "Our user community includes many different types of people. The fact that VAX is interactive and easy to use is very important to us."

"Also," Muller continues, "our image processing work made VAX's large program

capacity very attractive. It can hold several big matrixes simultaneously. Equally important, VAX can be expanded to meet our requirements for years to come."

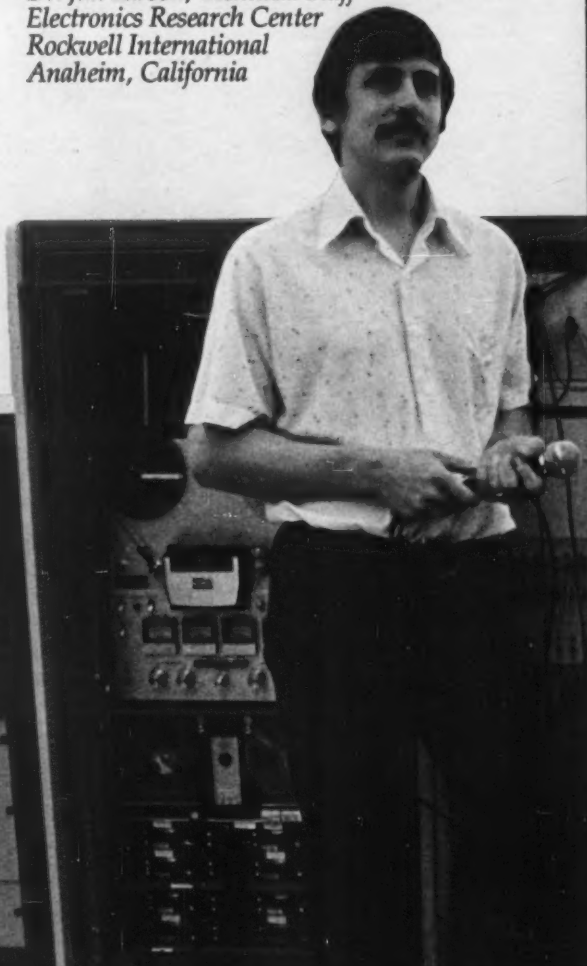
On ease of program conversion, Muller says, "We're finding it as simple as Digital promised."

And according to Muller, VAX's price/performance ratio has proved "very favorable."

Concludes Muller, "We don't know of another machine anywhere that could handle the job as well as VAX."

**"VAX's real-time capabilities are even better than we expected."**

*Dr. Jim Larson, Technical Staff  
Electronics Research Center  
Rockwell International  
Anaheim, California*





Scientists at the Information Sciences Laboratory at Rockwell International Electronics Research Center are developing computer applications such as target-spotting identification and tracking, image enhancement, and speech processing.

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According to Dr. Jim Larson, member of the technical staff at Rockwell International, "VAX gives us great real-time response. With our old mainframe computer, we had to suspend all of our other user processes during real-time digitization. But VAX's FORTRAN is a lot more powerful. On VAX you never even know when something is being digitized.

The fact that VAX is able to handle real-time and interactive analysis simultaneously is a feature that's especially attractive. Says Larson, "Our people only have to learn and use one computer."

## "VAX's large address capacity makes it a powerful real-time machine."

*Dr. William E. Drummond, Chairman  
Austin Research Associates  
Austin, Texas*

At Austin Research Associates in Austin, Texas, plasma physicists are using VAX to conduct far-ranging scientific research on the collective acceleration of sub-atomic particles.

"We chose VAX because it provided the ability to directly address very large data arrays. And that is crucial to each of our applications," explains Dr. Drummond, Chairman at Austin Research.

"VAX has the capacity to acquire data simultaneously from 15 different experimental sensors, digitize it, and immediately present results to our researchers. And furthermore," Drummond adds, "VAX gives us a perspective we never had before by rapidly providing data comparisons with thousands of earlier test results.

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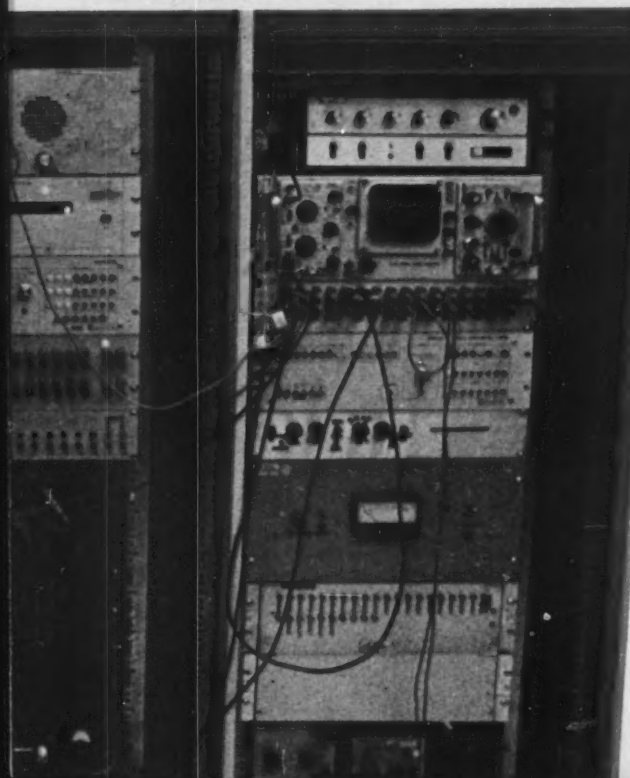
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## IN DEPTH

(Continued from In Depth/5)  
eliminating the present economies of the flat-rate, leased-line tariffs.

This may increase international data communications costs as much as tenfold. However, it is uncertain whether the PTTs can really match the ability of private networks to incorporate state-of-the-art technical advances, to maintain reliability and security and to provide adequate service and support.

The second part of the strategy, concurrent with the development of pub-

lic networks, is to alter conventional flat-rate leased-line tariffs by selective introduction of usage-sensitive tariffs for some multiple-user customers. This change is also to the disadvantage of private network operators, even though the considerable increases in flat-rate charges in recent years are reducing the difference.

Volume-sensitive tariffs for low- and medium-speed international services have already been established, and some PTTs are pressuring private

multiple-user data networks to use these instead of flat-rate, leased-line services.

The PTTs appear to be determined to force users of private networks onto the public data networks using economic means or restrictive regulations. In terms of transborder data flow concerns, the outcome is likely to be greatly increased cost of, and greatly reduced user control over, international data transfers.

Numerous international issues in

data flows between industrialized countries and the Third World seem now to be coalescing and giving rise to policy trends of great significance to the TDF debate. These issues form the framework of a much larger international controversy concerning the nature and degree of political, economic, technological and cultural interdependence between nations. A major part of the controversy concerns whether (and how) to reduce the great dependence of Third World countries on the First World for DP services and information products.

In developing countries, there is a growing concern over the still embryonic state of DP industries and the consequent heavy dependence on the First World. Similar dependence on other types of information products (television programming, periodicals, news services); commercial products that follow (consumer goods); and the associated cultural "products" (ideas, values, styles) is of equal concern. Most of these countries regard an economic, technological and cultural inundation from abroad as a very real threat to national sovereignty.

The question is, to what degree can they reduce the present overdependence on the First World, and how can they direct or encourage development of the types of information industries that can help achieve the political, economic and cultural goals of their societies? A growing number of Third World nations have sought to develop means to effectuate their preferred policies in these areas. These means are labeled "informatics/economic policies" in this article.

Generally, national informatics/economic policies involve the planning and control of domestic information industries or institutions. More specifically, included are policies on infrastructure development, educational and professional programs, product and service development and usage, foreign product service and system usage and international information flows. Even though the particular national policies chosen within each country vary according to political traditions, the goals of the government and the nature of the problems perceived, they usually address many of the same types of concerns.

### Intergovernmental Conference

On the international policy level, many Third World countries are members of the Intergovernmental Bureau for Informatics (IBI). In August 1978, IBI and the United Nations Educational, Scientific and Cultural Organization (Unesco) cosponsored an Intergovernmental Conference on Strategy and Policies in Informatics (Spin); another conference on the topic of transborder data flows is planned for 1980. The resolutions adopted at the Spin conference continue the development of what has become known as the "New World Information Order" — an effort by Third World countries to implement their goals of lessened dependence in informatics on the First

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## World countries.

The following excerpts from the Spin resolutions<sup>1</sup> illustrate the direction taken in formulating cooperative informatics/economic policies among the Third World countries:

1. Governments should make efforts to exchange experiences and information acquired (in informatics) in ascertaining their needs and in meeting them.

2. Governments should encourage a more rational use of local informatics capability in hardware, software and services, and bilateral agreements between countries should be encouraged for the sharing of techniques, resources and information regarding (informatics) education and training.

3. Every effort should be made to promote abolition of discriminatory restrictions in exchange of scientific and technical documentation and the sale of computer hardware and software.

4. International agreements should be established on the rights of states in respect to transborder data flows, providing for the protection of information held by governments, private institutions and individuals.

Many Third World countries perceive that as the more industrially developed countries evolve into the "information age" (in which information industry trade will become predominant), the Third World will lag behind and suffer continuing domination (as it did in the early industrial era). In an attempt to break this cycle, these countries strive to develop and protect their own information industries/institutions and at the same time minimize the impact of and reliance on First World information industries.

## Converging Trends

One important matter of disagreement in the TDF debate concerns the motivations alleged to the various parties and the interrelationships between their actions in the three policy areas. Some observers have asserted that tariff policies and data protection legislation in Europe stem from the common objective to blunt the impact of U.S. technological and economic superiority in computer communications.

While the consequences of these policies may be the same, the individual motivations behind them have arisen for quite different reasons. The financially strapped PTTs may indeed espouse this goal as they have continually sought new sources of revenue and have been genuinely alarmed that private networks may divert revenue from public services. As for privacy protection concerns, they emerged in the national and international scene in the early 1960s as a result of large-scale automation of record-keeping and were extended to TDF in response to increased transborder flows of personal data.

However, it is becoming more apparent that while the earlier motivations in the two policy areas may have arisen for unrelated reasons, future motivations will probably arise from a more

common and integrated set of concerns. This is not to say that earlier motivations of the PTTs and data protection advocates will have disappeared, but rather that they will have become integral parts of the broader concerns.

The integrated set of concerns that seems to be evolving in most European countries and in Canada parallels the informatics/economic concerns of the Third World (the difference being one of degree rather than type). Govern-

ments of these countries are taking note of the fact that the ability to access, process, use and control vital information is a requisite for the maintenance of political, cultural and economic sovereignty. Concerns of data protection advocates for the protection of personal data are a subset of this, as are the concerns of PTTs for greater revenue from telecommunications services.

Observers have noted three policy trends: development of European data

protection policies; continuing increases in PTT-controlled data communications costs; and growth of Third World informatics/economic policies. When contrasting these three trends to U.S. policies, observers have found outlines of a significant conflict — even described as an "informatics war" — that is beginning to emerge.

Indeed, many Third World countries have openly stated their goal of thwarting First World (often read, (Continued on In Depth/10))

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## IN DEPTH

(Continued from In Depth/9)

U.S.) information processing dominance in their countries. Comments from the 1978 Spin conference in Torremolinos, Spain, attest to the seriousness with which many Third World representatives view the problem<sup>2</sup>:

- Information is more than a form of power. It is an entire power system itself: it allows countries and people to make use of other techniques.

- Informatics is critical for development; there is a real possibility of a redistribution of world power zones because of monopolizing of world wide information networks.

- There is a growing inequality within the industrialized world: one or two countries (or even a single multinational corporation) against all other countries which would be reduced to mere intermediaries or peripheral agents — their independence would disintegrate.

Will First World countries also subscribe to these beliefs and adopt the philosophies of Third World informatics advocates? At present it appears that they probably will as illustrated by recommendations in France<sup>3</sup> and in Canada<sup>4</sup>. However because the interdependencies are greater and because information industry disparities are smaller among First World nations (as compared to differences between the First and Third Worlds), the policies toward independence in informatics developed by First World countries are likely to be less severe, in terms of regulations and restrictions imposed on transborder data flows, than those that are likely to emerge in Third World countries.

### Altered Economic Reality

Nonetheless, the U.S. is likely to be

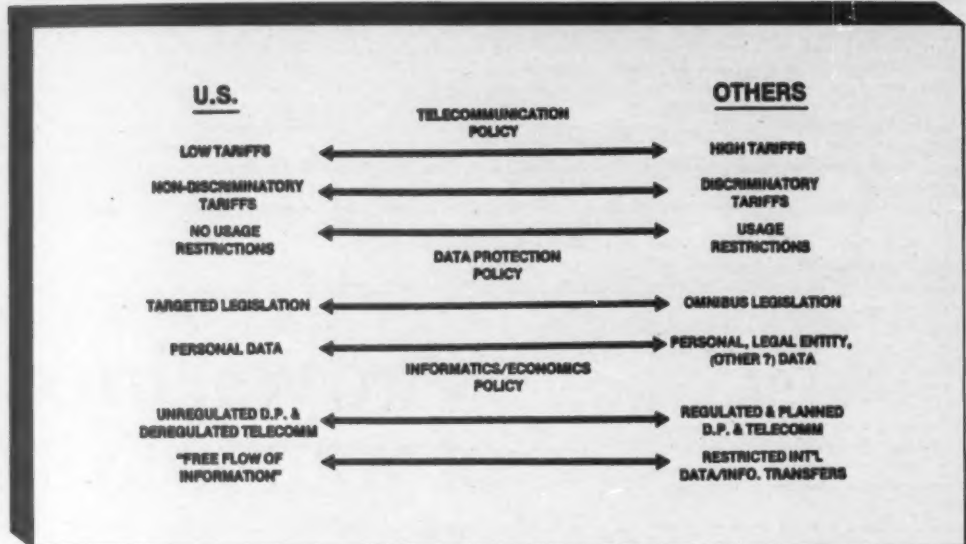


Figure 4. Summary — U.S. vs. Others

faced with an altered international economic reality. With controls on international information flows increasing, no longer will U.S. international enterprises (both information processing industries and other industries or enterprises) be able to continue the growth of their international operation and expansion in the same way they have to date. Figure 4 illustrates the areas of contention.

These issues and the changes that will stem from them do not represent a temporary aberration in international relations; rather, they represent the beginning of a significant alteration in the present international economic or-

der for informatics now dominated by First World countries, the U.S. in particular.

Over the next few years, a number of international conferences will take place in which decisions vital to U.S. information industry interests will be made. The following are a few examples of planned international meetings and the issues that will be addressed:

- The United Nations conference on the Peaceful Uses of Outer Space will address issues related to satellite remote sensing of natural resources and the rights of surveyed nations vis-a-vis the surveyors.

- A UN committee will convene to

address whether broadcasters of one nation may have to acquire advance clearance from another nation before sending programs there via satellite.

- A UN conference on Science and Technology for Development will have addressed the relation between science and technology applications and the world economic order.

Whether or not the U.S. can effectively participate in the efforts to examine and restructure the basic economic relationships between countries, relationships will change. Broadly speaking, U.S. policymakers face two sets of decisions regarding U.S. participation in this restructuring effort:

1. They must decide what degree of centralization and unification of approach would be most advantageous in dealing with such issues. Is the present decentralized structure of informatics-related government agencies appropriate, or would a centrally coordinated policymaking structure be better for international negotiations?

2. They must decide on the degree of cooperation to be extended in each forum and on each issue.

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## For Large-Scale Programming Alpha Micro Small Business Line Debuts

IRVINE, Calif. — A series of multitasking, multiuser small business systems ranging from a dual floppy-disk-based package to a system featuring a 90M-byte hard-disk drive has been announced by Alpha Micro, Inc.

The AM series models 1011, 1031 and 1051 time-sharing systems are the firm's first venture into the packaged business systems world. Previously, the company just offered the AM 100, a small-scale S-100 bus-compatible MPU.

Designed for large-scale programming in Basic and other high-level languages, the new series of machines includes a 16-bit

processor with two on-board serial I/O ports and one parallel I/O port.

Although all three systems contain a standard 64K bytes of random-access memory (RAM), memory on the 1031 and 1051 can be expanded, in 64K-byte increments, up to 1M byte. The 1011 is limited to a maximum 448K bytes of memory.

All RAM memory contains full error-correction logic. In addition, floating-point hardware and a real-time clock are standard system features. Eight levels of direct-memory access and multilevel vectored interrupt lines are also provided, the

spokesman said.

Each model in the series incorporates a comprehensive macroinstruction set said to be equal to or better than that offered on competing 16-bit machines.

The systems run under the firm's Alpha Micro Operating System (Amos) and includes a number of standard software packages: a macroassembler; Alpha Micro's version of Basic, Lisp and Pascal; Alphavue word processing software; and a variety of utility programs, the spokesman continued.

Optionally available for both the 1031 and 1051 is a business applications software package

consisting of general ledger, accounts receivable, accounts payable, order entry/inventory control and payroll. Each program is a complete module that can be run by itself or integrated by the user into a complete accounting package, the spokesman claimed.

The AM 1011 system includes a processor with 64K bytes of memory and 2.4M bytes of dual floppy-disk storage. Housed in a single rack-mountable or table-top chassis, the package costs \$12,500.

The 1031 system has a 10M-byte hard-disk drive, incorporating a 5M-byte removable cartridge, and the 64K-byte processor. With the same chassis configurations, this unit sells for \$17,835.

Finally, the 1051 includes an MPU, 64K RAM and a 90M-byte hard-disk drive with a 15M-byte removable cartridge. This package is priced at \$23,675.

Peripherals can be expanded to include the firm's full line of multiple hard-disk drives, printers, magnetic tape transports and CRT terminals.

Additional information can be obtained from the company at 17881 Sky Park North, Irvine, Calif. 92714.

## Package Lets Users Attach Series/1 To 360 or 370 via I/O Channels

SANTA BARBARA, Calif. — Channel Systems International has introduced a hardware and software package that lets users attach an IBM Series/1 minicomputer to an IBM 360 or 370 mainframe via its I/O channels.

Using the package, the Series/1 appears as a Model 1442 card unit to the host system. The system-to-system emulation is the same as that used to attach the IBM System/7, and permits users to upgrade from that system to a Series/1 without requiring 360 or 370 program modifications, the firm claimed.

Attaching the Series/1 to the host system in this manner reportedly provides a means of connecting process control, communications and nonstandard I/O devices to the 360 or 370.

Although recognized by the host as a card unit, the mainframe's OS and DOS do not limit logical record lengths to 80 bytes, a company spokesman explained. This lets the user select record lengths that are appropriate to the application.

The package software supplies

a read/write interface to the host channel and runs under the EDX operating system. The hardware offers transfer rates of up to 800K byte/sec and allows concurrent channel transactions over more than one 360 or 370 address.

Finally, the package permits several channel connections for

purposes of alternate pathing and/or loose coupling between several 360s or 370s, using the Series/1 as the intersystem switch.

The package costs \$10,500, with deliveries scheduled for this April, the spokesman noted from 4129 State St., Santa Barbara, Calif. 93110.

## Dataram Controller Runs on LSI-11s

CRANBURY, N.J. — Dataram Corp. has unwrapped a microprocessor-based storage module drive (SMD) controller for Digital Equipment Corp. LSI-11 microcomputers that is capable of handling up to four 80M-byte disk drives.

The SO3/B controller emulates DEC's RK611 device, which interfaces to DEC's RK07 SMD and operates under the micro-minicomputer manufacturer's RT-11 and RSX-11M operating systems.

By using the Dataram controller, LSI-11 systems can be attached to Control Data Corp.'s 80M-byte 9762 or 300M-byte

9766 SMDs, or similar drives from Ampex Corp., Ball Computer Products, Inc. and Century Data Systems, Inc.

The SO3/B is packaged on two standard DEC quad boards and takes up two slots in the host LSI-11. A 2K-byte bipolar buffer contained on the unit reportedly eliminates the possibility of data-late errors and permits the controller to be assigned a low bus-priority level.

An internal self-test feature is included, and the controller's microcode has an automatic boot-

strap, a spokesman said.

In addition, the SO3/B has error-correcting code logic and a 16-bit cyclic redundancy check for header error detection. The controllers can be used in a dual-port configuration in which two SO3/Bs and their associated LSI-11 hosts interface to a common SMD or group of drives.

The SO3/B costs \$5,400, not including the cabling assemblies.

More details on the controller can be obtained from the firm at Princeton-Hightstown Road, Cranbury, N.J. 08512.

## Floppy Controller Handles Four Shugart Drives

SAN FRANCISCO — Micro-mation, Inc. has unveiled a single- and double-density floppy-disk controller that is compatible with Intel Corp.'s Multibus configuration and can handle up to four Shugart Associates, Inc. 8-in. drives.

The MM-SBC-80 allows users to read and write from a single-density diskette on one drive to a double-density diskette on another, or vice versa, a spokesman claimed. The controller automatically determines the density of the inserted diskette, with no console input required by the user.

With four double-density

drives, users can employ 2M bytes of on-line storage. The controller supports the following soft-sectored formats: IBM 3740 single-density and System/3 double-density, plus Intel's ISBC-201 single-density and ISBC-202 double-density.

The controller is available separately or in a floppy-disk subsystem that includes two Shugart double-density drives, the controller, a power supply, an enclosure and all connections.

The controller costs \$995 and the megabox subsystem is priced at \$3,495 from the firm at 1620 Montgomery, San Francisco, Calif. 94111.



## Damocles' Noose?

Although this may look like a rather drastic means of dealing with DP personnel problems, it is actually one user's way of reminding his staff that computer errors may be disruptive and dangerous to the health of the business. Story on Page 63.

MULTIMEDIA



## System Links Host MPU, LSI-11s

OAKLAND, Calif. — Peritek Corp.'s Computer Technology Division recently unwrapped a two-board linking system that interfaces a host microcomputer system with up to six Digital Equipment Corp. LSI-11 microprocessors.

The Hex-L11 creates a direct-memory access link between a host and several satellites, joining the computers in a radial formation. The device is reportedly suited for handling both short and long data blocks.

In addition, the system provides intermediate data buffers, control and status registers and mailbox registers for the host and satellite processors, a spokesman pointed out.

The device incorporates an 18-bit interprocessor that, when used with

DEC's LSI-11/2 microcomputer, reportedly quadruples the 16-bit addressing abilities of the machine, extending the random-access memory from 64K bytes to 256K bytes.

Although the Hex-L11 does not provide a serial interface, users can make up for this by separately purchasing DEC's DLV-11 interface unit, the spokesman stated. Moreover, the de-

vice is currently only available in a Q-bus format, but will be offered in a Unibus-compatible format in the third quarter of this year.

In a six-satellite set up, the system sells for about \$4,455. Three-satellite and binary-link systems cost \$3,075 and \$1,596, respectively.

Peritek can be reached at 3014 Lakeshore Ave., Oakland, Calif. 94618.

## Turnkey Based on DEC Gear

WESTLAKE VILLAGE, Calif. — Chrislin Industries, Inc. has unwrapped a Digital Equipment Corp. hardware-based turnkey system that features up to 256K bytes of memory.

The CI-103 is supplied with either a

DEC LSI-11/2 or 11/23 processor, a keyboard and a DEC VT100 CRT terminal. The computer uses DEC's PDP-11 line of business software and can optionally be fitted with that firm's RX02 1M-byte floppy-disk or a

## Durango Drive Reduced 21%

SAN JOSE, Calif. — Durango Systems, Inc. has announced a 21% price reduction on its 12M-byte fixed disk drive.

The price of the disk drive has been dropped from \$8,990 to \$7,065, effective immediately. The firm is now offering a 24M-byte version of its hard disk product at the other drive's price.

Both disk systems fit with Durango's F-85 business computer system, a spokesman said from the company at 3003 N. First St., San Jose, Calif. 95134.

10M-byte cartridge-disk system.

The entire machine is housed in a single cabinet.

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The CI-103 Turnkey System

The single quantity price of the system with the LSI-11/2 processor and 64K bytes of memory is \$4,500, while the LSI-11/23 model with 256K bytes costs \$9,600. The floppy-disk and cartridge-disk systems from Chrislin Industries sell for \$3,045 and \$6,100, respectively.

Chrislin Industries can be reached at 31352 Via Colinas No. 102, Westlake Village, Calif. 91361.

## Cartridge Backs Disk System

TAHOE CITY, Calif. — ABC Computers, Inc. has introduced a table-top Winchester-type disk system with a tape cartridge backup unit for Digital Equipment Corp.'s PDP-11 minicomputers.

The package consists of a California Computer Products, Inc. Marksman 14-in. 20M-byte Winchester drive and a Data Electronics, Inc. 17M-byte tape cartridge. The system is enclosed in a cabinet with power supply and controller.

The system costs \$8,600 from the company at P.O. Box 7529, Tahoe City, Calif. 95730.

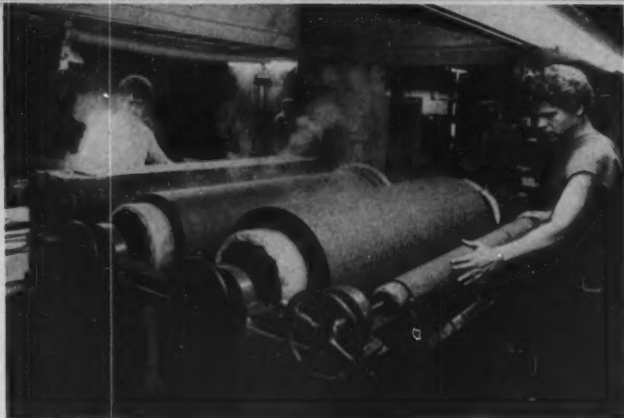
## Price Slashed 50% On Graphics Option

NATICK, Mass. — Integral Data Systems, Inc. has reduced the price of its Dotplot graphics option for the firm's Model 440 Paper Tiger printer by more than 50%.

The graphics option, which originally sold for \$199, is now priced at \$99.

Under software control, Dotplot is said to provide full dot-plotting graphics capabilities, including screen graphics, illustrations, block letters and plot charts.

The company is located at 14 Technical Circle, Natick, Mass. 01760.



A small business computer controls the progress of more than 150,000 rolls of fabric each year at Lawrence Textile Shrinking.

## Big Bertha Shrinks DP Load For Textile Treatment Plant

WALTHAM, Mass. — In a family business like Lawrence Textile Shrinking Co. (LTS), everyone has to pull his own weight.

Take Big Bertha, for instance. She keeps track of the more than 150,000 rolls of fabric the company processes each year and controls their progress through any one of the more than 800 combinations of textile treatments performed at the plant.

She also prepares work orders, inspection reports, shipping slips and invoices and controls inventory. And in her spare time, she takes in outside work to generate additional income for Sam Benigno and his family.

In case you haven't already guessed, Big Bertha is not a person, but the name affectionately bestowed upon the company's Honeywell, Inc. Level 62 small business computer. The machine has 196K bytes of memory, a 300 card/min card reader, four 28M-byte disk drives, a 400 line/min printer and two Honeywell VIP CRT terminals.

Tom Benigno is Sam's eldest son and vice-president of Lawrence Textile Shrinking. In addition, he is president of Compudot Co., Inc., a service bureau organized to take up the computer's spare time.

On route from New England mills to the user and manufacturer, rolls of fabric are sent through this company

for shrinking, inspecting, decating, tentering, laminating or any of the other 15 basic processes or combinations of processes performed here.

In a typical year LTS processes more than 11 million yards of fabric representing 50 different types and colors. This fabric is sent from approximately a dozen mills in the New England area. The company uses and keeps track of more than 100 defect codes and, in addition, each of the 800 possible combinations of the basic routines has a code of its own.

### Big-Bertha's Job

Tom Benigno's Big Bertha keeps track of the 900-plus codes and prepares the inspection reports, invoices, billing and shipping documents. And, although he had no prior DP experience, Tom wrote most of the programs for the Level 62 himself, with guidance from a Honeywell representative.

Each roll of cloth in an order is assigned a separate control number containing the codes for the customer's name, address, credit status and history. Codes are also assigned for the processes each roll of fabric will undergo as well as for the shipping-out date, carrier, customer's purchase order number (or any other control number the customer wishes to use), the to-

(Continued on Page 66)

## MPU-Based Universal Interface Drives TI Thermal Printers

PARKER, Colo. — A universal interface for Texas Instruments, Inc.'s 12- and 20-column thermal printers has been unveiled by Technology Associates, Inc.

The microcomputer-based UTI-80 board includes a dual in-line package switch-selectable parallel or serial input format and a built-in self-diagnostic feature that checks the operation of the interface, power supply and printer. Invert transmission rates are also switch-selectable at 110-, 300- or 1,200 bit/sec, a spokesman said.

Options include an interface-to-printer cable and a power supply.

The UTI-80 costs \$185 while the cable and the power supply are priced at \$45 and \$70, respectively. OEM discounts are also available from the com-

pany at 6559 E. Parker Road, Parker, Colo., 80134.

### Free Guide Details Eclipse S/140 Mini

WESTBORO, Mass. — Data General Corp. has released a brochure detailing its Eclipse S/140 minicomputer, released last November as part of the firm's scientific computer line.

The publication discusses the computer's hardware features, including its single-board CPU and optional floating-point unit. Software, peripherals and S/140 upgrade potentials are also covered in the brochure.

The single-sheet publication is available free from DG at Rt. 9, Westboro, Mass. 01581.

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## Air Land Systems Controller Ties Florida Data Printers to CPUs

FAIRFAX, Va. — A microprocessor controller that permits Florida Data Corp. printers to operate with IBM, Univac, Honeywell, Inc. or Burroughs Corp. processors has been introduced by Air Land Systems Corp.

The MCP-23 receives its power from the printer and performs the necessary conversion and protocol emulation that allows the printer to function with the above processors.

The unit's RS-232C-compatible I/O port can be

programmed to operate in full- or half-duplex modes with synchronous or asynchronous data, the firm claimed.

Block checking and data buffering are provided under the device's program control. In addition, the controller fea-

tures two 8-bit parallel input ports, sensed under program control, that provide any necessary addressing capabilities.

The controller costs \$1,670 with OEM discounts available from the company at 2820 Dorr Ave., Fairfax, Va. 22031.

## Extended Keyboard Supports WP

WELLESLEY, Mass. — Algorithmics, Inc. has introduced an extended English keyboard for its line of Algo-2100 word processing

(WP) and office information systems.

The KB-2100 is a detachable unit featuring 113 keys arranged in five major functional key clusters. Each of the key sets is colored, according to its specific function.

The main keypad incorporates typewriter pairing with the five rows of keys arranged in a dish out layout to facilitate keystroking, a spokesman said. Extra-large keys control special actions such as carriage return, shift and tab.

Used with the WP system, the keypad plus the numeric pad produce 96 characters in-

cluding special punctuation symbols such as brackets and greater-than and less-than figures. A super shift key allows the main keypad to produce an additional 20 symbols, which can be either technical or math-oriented or foreign characters.

The keyboard also supports DP and special applications software packages.

The keyboard is standard on all current Algo-2100 systems and available as an upgrade for present system users. The unit costs \$450 from the firm at 177 Worcester Road, Wellesley, Mass. 02181.

directional interface modules and occupies one slot in the computer's chassis. Software included with the device provides simultaneous operation of both interfaces on two independent bus networks in any combination of talker, listener or controller modes, a spokesman said.

### Typical Capabilities

Typical capabilities of the dual IEEE 488 interface device include simultaneous control of two independent bus networks, control of one bus network while functioning as talker/listener on another network and the simultaneous listening of one CPU to two talker systems.

The interface costs \$2,875 plus an additional \$30 for user and maintenance manuals. Systems analysis and applications software support for the device are available from the firm, the spokesman noted.

RBI Systems can be reached through P.O. Box 6393, Silver Spring, Md. 20906.

## 'Big Bertha' Shrinks Work Load

(Continued from Page 63)  
tal number of pieces in a single order and the name of the mill from which the fabric came.

The same information also appears on the computer-generated job ticket attached to each roll of fabric. In addition, the style, color, customer piece number, along with the case and dye lot number assigned by the mill, are entered into the order record. This data is needed for recording flaws and yardage discrepancies on the inspection document.

The service bureau president is currently working on a program for having the computer print the inspection reports, which are now prepared by hand. An on-line inquiry program to obtain up-to-the-minute status reports on any given customer's order is also in the planning stage.

Tom Benigno said that one of the major reasons he chose the Honeywell system was its ease of programming and use for those with no prior DP training.

### One-Day Conversion

Benigno's previous computer was a Honeywell 58, a small machine originally acquired only for computerizing order entry.

As the advantages of computerizing other administrative jobs — like general ledger, accounts payable and receivable and payroll — became apparent, it also became apparent that the computer was no longer big enough to handle all that Benigno expected of it, the head of the service bureau

said. "We planned the conversion over a one-month period, but the actual conversion took only a day — I mean 24 hours of work," Benigno said. "Friday I was on the 58, Monday I was running payroll on the new Level 62."

Another reason for selecting the Level 62 was the ability to expand the system — additional memory, to more than 1M byte, can be added on site, without swap-out of hardware or conversion of existing programs.

It was with this expansion capability in mind that Benigno established Computo Co., Inc., an information processing service for the medical and dental professions. The company's president said that after satisfying his own data processing needs, he has four to five hours of computer time daily

that can be used for third-party billing.

But, no matter how enthusiastic Tom Benigno is about the company's computer, textiles are his, his brother John's and his father's main concern.

"Textiles, particularly woollens, need to be pre-shrunk before they can be manufactured or converted into wearing apparel or other end products," Tom said. "The shrinking process, called sponging, is a specialty, and many mills prefer to have companies like ours do that sort of work."

He explained that the shrinking is done by submitting the fabric to steam as it is unrolled.

As the product is rerolled, it is inspected for flaws in the texture, weave or pattern. The flaws in the fabric are marked and noted on an inspection report.

## Package Gives Apple IIs Color Graphics Capability

NORTHRIDGE, Calif. — Rainbow Computing, Inc. has unveiled a digitizer and software drawing package for Apple Computer, Inc.'s Apple II microcomputer that provides a high-resolution color graphics capability.

The Versawriter system consists of a drawing board and interface, diskette software, calibration chart and instruction manual. Users require an Apple computer with Disk II, 32K bytes of memory and the firm's Applesoft read-only

memory to implement the graphics package. When used as a pointer, the system can direct movements of objects on the Apple's CRT screen to create graphics. As a digitizer, the Versawriter can be used to input graphical data for analysis, or to be added to flowcharts or diagrams.

The graphics package retails for \$199. Additional information can be obtained from Rainbow at 9719 Reseda Blvd., Northridge, Calif. 91324.

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## Report Cites Doubling Of Large-Scale Installations

WALTHAM, Mass. — The U.S. installed base of large general-purpose mainframes more than doubled between 1971 and 1978, while installations of smaller general-purpose mainframes grew by only 10%, according to "EDP/Industry Report" (EDP/IR), as publication of International Data Corp. (IDC).

This growth in large-class machines, comparable to IBM's 370/155 unit and above, has been a major factor in the increased profitability mainframes have experienced during the past few years, EDP/IR observed.

High-end installations, which at the end of 1978 totaled about 5,652 machines, increased their share of the total general-purpose U.S. base from 4% at the end of 1971 to 10% at the end of 1978.

During the same time, these CPU installations grew at a rate of 158% while the total installed base grew only 16.6%.

And it seems the rapid growth in large-end installations will continue to outpace growth in the small and medium-sized general-purpose units. By 1983 the large machines may account for about 15.7% of the installed

base of general-purpose mainframes, EDP/IR predicted.

Between the end of 1971 and 1973, large-end machines grew by a total of 53.6% and continued to display hefty growth rates from 1975 to 1978 averaging 20% annually. However, during the same period, the smaller general-purpose base declined 9% from 1975 to 1977 and 2% during 1978.

The number of small to medium-sized systems installed peaked in 1975 with some 58,787 units in place, but by the end of 1978 that base had diminished to 52,308 units, according to IDC statistics. These systems are comparable to IBM products ranging from System/3 Model to 370/148s.

Some general-purpose vendors added to their base of large systems at the expense of IBM, whose share of the high-end processor market dropped from 68.5% in 1971 to 67.4% in 1978, EDP/IR suggested.

In general, IBM has shown greater growth in the small and medium-sized mainframe sector, increasing its share from 63.2% in 1971 to 66.9% in 1978. EDP/IR noted.

## Telex Plans to Match All IBM 3270 Products By End of This Year

By Marcia Blumenthal  
CW Staff

BOSTON — Telex Computer Products, Inc. will match all of IBM's new terminal products by the end of this year, according to Bert Hochfeld, Telex's director of product planning and strategies.

A step in that direction was the recent introduction of two products compatible with IBM's 3270 family: the 278E CRT terminal and the 310, Telex's first Ascii Teletype terminal, an alternative to IBM's 3101 (See story on Page 45).

During a recent interview here, Hochfeld admitted Telex has been slow in matching IBM's range of 3270 products. "Up until recently we were able to offer users the CRT but not the printer or controller," he said.

Although they were introduced at the National Computer Conference last June, "we made the CRT last July, the controller last October and the printer in December," he continued.

### Backbone of Business

Although Telex is comprised of four separate divisions, the backbone of its business is the 3270-compatible market. Be-

cause the 3270 is the "Model T" of the terminal business, major mini computer makers are now adding software to make their CPUs 3270-compatible, Hochfeld pointed out.

Prime Computer, Inc. is one such company, and Telex recently completed an arrangement whereby it will bid jointly with Prime for 3270 business, Hochfeld disclosed. This is an informal agreement and not a joint marketing venture, he added.

### Disappointing Performance

Despite new opportunities in the 3270 market, of which Telex claims to hold an 8% share, Telex's financial performance for the first nine months of its current fiscal year has been disappointing.

Consolidated revenues for the first nine months totaled \$119.2 million, up from \$106.6 million for the same period in its previous fiscal year. However, corporate earnings plunged from \$7.4 million during the first nine months of the preceding fiscal year to \$1.1 million in the current year.

Telex showed a third-quarter pretax loss of \$2.39 million, of which \$1.3 million was attributed to an adverse court decision requiring it to pay that sum as a fee to attorney Moses Lansky.

Hochfeld attributed part of the poor performance to shipping new products later than expected, as was the case with its controllers and printers.

Telex Computer Products contributes about two-thirds of the total revenues of Telex Corp., the parent company. The Terminal Communications Division comprises 60% of Telex Computer Products revenue.

Moreover, Telex also intro-

(Continued on Page 74)

## NCR Reshuffles, Creates Division

DAYTON, Ohio — NCR Corp. realigned its Engineering and Manufacturing Group last week, creating a new General Systems Division and changing the emphasis of its Components and Support Division.

The move was primarily a recognition of the growing importance of semiconductors to the company's operation, NCR said.

Formerly part of the Components and Support Division, the now renamed Components Division will concentrate exclusively

on the development of semiconductors, plasma displays and other types of process components. Prior to the change, the Components Division also produced subsystems such as power supplies.

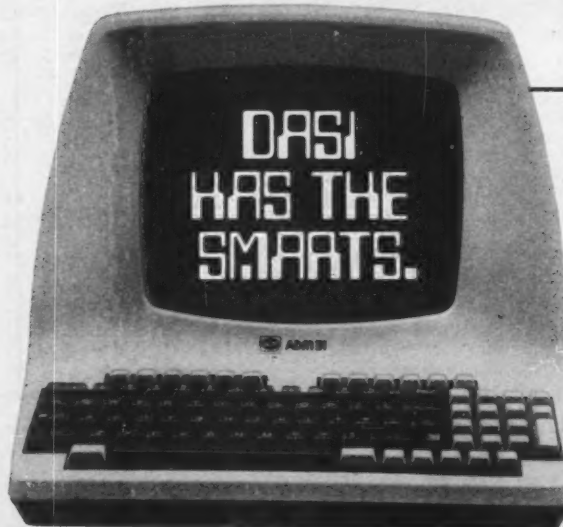
Named as vice-president of the division was Dr. James Van Tassel, a 20-year DP veteran with Texas Instruments, Inc. Before joining NCR, Van Tassel was general manager of one of TI's major MOS microprocessor activities.

Vernald F. Bean, who formerly headed the Components and Support Division, was named vice-president of field engineering, a new corporate post at NCR.

Aside from changes at the Component Division, NCR created a new division, the General Systems Division, which is responsible for producing all terminal and data entry devices — except for retail terminals — and bank proof and sorter systems.

(Continued on Page 72)

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## Supershorts

Tymshare, Inc. has established a communications consulting subsidiary in Europe, Tymshare Network Systems Consulting S.A. Based in Paris, the subsidiary will provide consulting services, including the training of people and maintenance of equipment, to organizations such as the European postal, telephone and telegraph administrations and international record carriers.

A.B. Dick Co. has agreed in principle to purchase all rights to the shared-logic word pro-

cessing products of Hendrix Electronics, Inc. A.B. Dick plans to manufacture these and related products for the office automation systems market at a newly acquired plant in southern New Hampshire.

Sanders Associates, Inc. has signed a multiyear OEM agreement with Control Data Corp. for interactive graphics display terminals. CDC will market the terminals for computer-aided design applications and support them with various software products.

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## Revenues at \$3.6 Billion Last Year

# Thomson CSF Forms DP Arm

By Rex Malik  
Special to CW

PARIS — Thomson CSF has regrouped its DP interests, including five hardware companies, three instrumentation firms and three software companies, forming them into a subsidiary to be called Thomson CSF Informatique.

In making the announcement, Francois de Villepin, senior vice-president for Thomson's CSF's DP interests, noted the company's revenues last year totaled more than \$3.6 billion.

Moreover, he said the firm would continue to trade with the Soviet Union despite the current U.S. embargo on exports of high-technology products to the Soviets because of the Soviet invasion of Afghanistan.

In fact, Sems, Thomson CSF's minicomputer manufacturer, clinched two sizable orders last year, one of them bound for the Soviet Academy of Sciences in Moscow. "Our

attitude [on] trade with Russia is purely commercial. We will follow the policy of the government," Villepin reported.

### Corporate Revenues

Of the \$3.6 billion in total corporate revenues, \$427 million were derived from computing interests. Thomson CSF plans sales of \$500 million in this area in 1980.

Of DP revenues, 69% was derived from manufacturing, including semiconductor interests in which Thomson CSF has a joint agreement with Motorola. Services comprised 21% of DP revenues, with scientific instrumentation rounding out the group's revenues.

Thomson CSF grew 16% last year vs. the average of 14% for the rest of the French DP industry, Villepin claimed. Sems grew 18%, delivering 1,800 minicomputer systems and bringing its total installed base of minis to more than 9,000.

In addition, the firm has delivered more than 8,000 intelligent terminals and has orders for 2,700 CRTs.

### Entry Into U.S.

Overall, 40% of the firm's products were exported, primarily to the European market; Thomson CSF has no plans to enter the U.S. market on its own.

However, Thomson CSF is currently studying the possibility of a minority ownership position with a U.S. DP vendor. No prospective vendors were named.

Moreover, Villepin said Thomson CSF this year expects to lessen its dependence on business with the French government, which currently accounts for nearly 50% of its domestic sales.

## ADL Seeking Technologies For Licensing by British

CAMBRIDGE, Mass. — Arthur D. Little, Inc. (ADL) has been retained by the UK's National Research Development Corp. (NRDC) to identify new firms with emerging technologies and products for possible license to British manufacturers.

The NRDC indicated to ADL six areas of interest it wishes to explore, including computer peripherals.

ADL expects to review up to 75 products before making a final recommendation of 15 products to the NRDC in June, according to Vice-President Guy L. Fougere. The NRDC will make the final selections, offering entrepreneurs cash up front for options of up to six months' duration.

During that time, the NRDC will evaluate the products' potential for commercialization.

Products that require major capital investment for production or which are highly cost-

competitive are less likely to be considered, ADL said, adding that the products should have the capability of reaching distribution channels in a relatively short time — within five years.

### Seeking Manufacturers

While evaluating products, during the option period, the NRDC will also be seeking British manufacturers interested in joint ventures or license agreements covering the transfer of technical know-how and exclusive manufacturing and distribution rights in Great Britain and Western Europe.

"The arrangement should provide a boost to entrepreneurs who have found venture capital difficult to obtain in recent years," Fougere said.

Firms with prospective products can contact ADL by letter only at Box 128, 15/209 Acorn Park, Cambridge, Mass. 02140.

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# DBMS, DRMS Shipments Seen Rising 74%

SAN JOSE, Calif. — Worldwide shipments of data base management systems (DBMS) and data resource management systems (DRMS) will experience a 74% annual growth rate in unit sales through 1983, according to a report by Creative Strategies International (CSI), a market research and consulting firm.

The sizable increase will result from the sharp decline in the costs of computers with a DBMS and the rising costs and lower productivity of the typical DP staff, the CSI report claimed.

The DBMS industry is evolving toward multifunction DRMS of which the DBMS is a subset, the report noted. A typical DBMS sale to a mainframe user that cost \$40,000 in 1974

now costs approximately \$150,000.

If this growth pattern continues, a typical sale could cost as much as \$500,000 in five years, CSI predicted.

Although sales will be high through 1983, the dramatic increases will taper off slowly as the mainframe and large business markets become saturated, according to CSI.

But the introduction of low-cost DBMS and DRMS software for use with small business computers will add significantly to the overall industry's growth for the next several years, the report noted. Most vendors of small business computers do not offer this capability currently, but will do so by 1983 in order to remain competitive, according to CSI.

A compound annual growth rate of 177% for unit shipments of DBMS/DRMS packages to the small business computer market has been predicted through 1983. The price of these packages to this sector will range from \$7,500 to \$20,500, CSI said.

Aside from the emerging small business computer market for DBMS/DRMS packages, new IBM announcements will spark a hefty demand for DRMS during the next five years, CSI stated. New products will include several new 4300 mainframes, an "H" series, a relational DBMS model and a firmware-oriented back-end processor.

As a result, during 1979-1983 the worldwide use of DBMS/DRMS software will climb from 38% to 55% on all

installed IBM mainframes, according to the report.

Leading this growth rate will be a proliferation of IBM's 4300 computers, 30% to 40% of which will be installed at remote sites, CSI noted.

## The Non-IBM Market

For the non-IBM market, change will be characterized by increased development and marketing by other mainframers of DRMS packages for machines of all sizes. Previously, many vendors had ignored the DRMS software, but changes in the user environment plus increased IBM competition will halt that neglect.

In the implementation of DRMS/DBMS packages by non-IBM vendors, CSI expects a compound growth rate of nearly 49% over the five-year period.

While the IBM and non-IBM mainframe and small business computer markets will show high growth, two minor markets — including the IBM System/38 and the 8100 — will be slow in developing, CSI noted.

The changing DRMS industry will attract new competitors in the '80s such as common carrier-supplied public data network systems, value-added network carriers, remote computing service bureaus, accounting firms, systems houses and on-line DBMS firms, as well as plug-compatible, office automation equipment and small business vendors, according to CSI.

CSI's report on DBMS market trends and vendors costs \$1,195 from the firm at Suite 275, 4340 Stevens Creek Blvd., San Jose, Calif. 95129.



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- What DP environments are best suited for the more intelligent hardware?
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## Contracts

Hetra has been awarded a one-year, \$233,000 addition to provide Contractor Interim Supply Support (CISS) on its ongoing U.S. Navy Contract. Hetra is supplying 100 Model 3300N high-speed line printers for use aboard navy ships.

Bolt Beranek and Newman, Inc. has been awarded a contract to install a nationwide data communications network for a major U.S. money center bank headquartered in New York City.

Control Data Corp. has received a contract from the U.S. Navy for the lease and maintenance of a Cyber 203 supercomputer and a Cyber 170/720 system, with associated peripheral equipment, systems software and training, to process environmental information.

Emulex Corp. will provide \$600,000 worth of SC01, SC11 and SC70 large disk controllers to Braegen Corp.'s Mini Peripheral Department over the next year.

Mohawk Data Sciences Corp. (MDS), has won a contract worth \$5 million to supply 226 distributed data processing systems to the New York State Department of Motor Vehicles (DMV) for installation at 102 (field) offices. The MDS 21/40 and 21/50 will be used as the DMV's primary network for transactions involving the issuance of driver licenses and automobile registrations.



## Sales Up 31%, Earnings 22% In First Quarter at HP

PALO ALTO, Calif. — Hewlett-Packard Co. reported a 31% increase in sales and a 22% increase in earnings for its first quarter of fiscal 1980.

For the quarter ended Jan. 31, revenues totaled \$664 million compared with \$505 million in the year-ago period. Earnings netted \$54 million or 91 cents per share compared with \$45 million or 76 cents per share in the 1979 quarter.

"Orders were above expectations... and we were able to make some improvement in our cost of sales as a percentage of revenues from the fourth quarter last year," John A. Young, HP's president and chief executive officer, said.

During the quarter, incoming orders totaled \$800 million, up 37% from the first

quarter of 1979. International orders were up 41% while domestic orders rose 33%.

Preliminary statistics showed that DP products accounted for 48% of total quarter revenues.

HP recently purchased 240 acres of land near Raleigh, N.C. Plans for the property's development are not yet complete nor has HP assigned a product line to the site.

## Nickels & Dimes

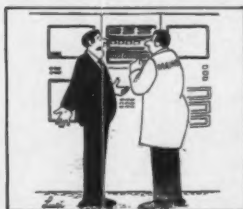
National Semiconductor Corp. will make a three-for-two stock split in the form of a stock dividend which will be paid March 18 to stockholders of record Feb. 19.

\$\$\$

Merger announcements in the computer manufacturing and services industry in 1979 totaled 88, a 7% increase from 1978 activities, according to W.T. Grimm & Co.

Of the 60 deals on which purchase price information was available, 22 were for cash, 18 for stock and 20 for a combination of cash and stock. Overall, 53% of the transactions used cash.

Publicly held sellers accounted for 28 of the computer deals, up from 26 last year. In addition there were five tender offers in the computer category compared with two in 1978.



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## SEL Sets Record Quarter

FORT LAUDERDALE, Fla. — In its second quarter of fiscal 1980, Systems Engineering Laboratories, Inc. (SEL) posted record orders and revenues for any quarter in its 19-year history.

SEL's quarterly revenues hit \$18.2 million compared with \$15.4 million in last year's second quarter.

Earnings for the period were just over \$1 million or 37 cents per share vs. \$904,000 or 31 cents per share in the year-ago period.

For its first half, SEL reported revenues of \$35.9 million, up 20% from revenues of just over \$30 million in fiscal 1979.

Earnings rose to \$1.9 million or 66 cents per share for the half, up from \$1.6 million or 55 cents per share in the first six months of 1979.

### Backlog at \$37 Million

Orders in the second quarter totaled \$22 million. At the end of the reporting period, the backlog stood at about \$37 million.

The firm recently arranged a new loan agreement for borrowing up to \$15 million on an unsecured basis.

Its previous lending agreement called for a \$9 million line of credit on a secured basis.

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# U.S. vs. IBM Hears 360/92 Projection Figures

By Connie Winkler

CW Staff

NEW YORK — The IBM 360/92 was expected to contribute more than \$27.7 million to IBM's profits when it was announced in August 1964, according to University of Chicago accounting professor Sidney Davidson.

Davidson untangled the announcement projection figures in great detail and then presented this conclusion in four days of testimony in the U.S. vs. IBM antitrust trial recently.

The Justice Department charged IBM prematurely an-

nounced the Model 92 — then a supercomputer — to ward off competition, particularly from Control Data Corp.; that the machine had numerous problems, particularly with circuits; and that resources expended on the 92 should have gone for more profitable models which even then were backlogged.

The certified public accountant also testified the Model 92 was expected to result in an after-tax rate of return "well above 10%" and thus in excess of the cost of capital at that time to produce the machine.

Davidson, in determining

profitability, relied almost entirely on a project cost estimate prepared by John F. Hicks for the August 1964 announcement.

Justice Department lawyer Alan Nisselson argued in essence that what he called the "Hicks worksheet" may not have been the appropriate figures for what Davidson did.

Moreover, although Hicks is still an IBM employee and although Davidson contacted a half dozen IBMers involved in the 92 work, he did not talk to Hicks, the witness said on cross-examination.

"He did his work. I didn't need to talk with him," Davidson said about Hicks. "Forecasting is a very hazardous business and you rarely come up precisely correct."

"This was an important decision, and I assumed the people who supplied the information were relying on the best information available at the time."

Davidson testified he used revenue projections subsequent to August 1964 to determine opportunity costs. Nisselson proposed he also should have used later projections and information in determining profitability.

Davidson has been working with IBM counsel since 1975,

logging about 1,000 hours at rates up to \$250,000. The government introduced a summary showing the professor and recognized author has been paid \$117,000 in fees through 1979, for this and the Greyhound Computer Corp. case.

The witness' direct testimony included 123 pages of written questions and answers which additionally criticized accounting practices in the late 1960s of Memorex Corp., Telex Corp. and computer leasing companies.

In doing the 92 analysis, which filled seven bulky volumes, Davidson said he determined, which of 900 costs were fixed and which were incremental — that is, would not have occurred if the 92 had not been produced. It was then a task of aggregating those incremental costs to determine profitability.

Davidson said he did not include opportunity costs in his analysis of the 360/92 because "I have concluded that the Model 92 represented a small fraction of IBM's total output and that there was anticipated to be adequate capacity within the IBM establishment so that the Model 92 could be produced without diminishing

the output and sales of other items."

He described opportunity costs as "the income that would have been earned if resources were used for the next best alternative to the use that is being considered."

Representing Davidson in the courtroom was James C. Hansen of the Park Avenue law firm of Olwine, Connelly, Chase, O'Donnell & Weyer, who previously has assisted the Cravath, Swaine & Moore lawyers. In breaking down the Model 92 figures, Davidson said he was assisted by one partner and two managers from Price-Waterhouse & Co.

## Poking Holes

During cross-examination, Nisselson attempted to poke holes in Davidson's work by suggesting items not considered in his calculations:

- There were two price cuts for the 92 in November 1964 and December 1965.

- Davidson's calculations assumed 25 units would be produced, the marketing assumption was 24, but only 13 units were actually delivered.

- In documents introduced in court, IBM's Components Division reported problems producing enough semiconductors. Davidson said this was in 1964 before circuits were required for the 92.

- A letter from a top IBM executive complained the 92 was a "panicky decision" from the financial standpoint.

Davidson countered that he relied on testimony of Paul W. Knaplund, then in charge of the Model 92, which stated that the 92 activity "could easily be carried out within the capability of IBM."

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## NCR Starts New Division

(Continued from Page 67)  
Heading this division is Darrell L. Clark, previously general manager of NCR's engineering and manufacturing plant in Dayton.

Also sporting a new name is the Terminal Systems Division, formerly called the Terminals and Subsystems Division. This division will manu-

facture retail terminals and systems, terminal printers, CRTs and power supplies.

Neil Jorgensen will continue as vice-president of the newly renamed division.

The Computer and Communications Systems Division was renamed the Computer Systems Division. William F. Buster remains vice-president.

## Executive Corner

### Deltak Names Vice-President

OAK BROOK, Ill. — Deltak, Inc. has promoted Serge P. Beauregard to group vice-president for development and operations.

In his new position he will be responsible for product planning and development, library services, corporate information systems, as well as corporate communication, promotion and advertising.

Beauregard, who has been with Deltak since 1976, previously was with the Data Systems Education Center for the Bell System. He planned, built, staffed and directed the center, which serves more than 20,000 DP professionals throughout the family of Bell System companies.

### Other Moves

- Centronics Data Computer Corp. has announced the ap-

pointments of John Morse as national logistics manager and Gerald Towns as administration manager for its Computer Printer Service Group. Phillip Tatum has been named district manager for the corporation's Texas Printer Service Center.

- David J. Horton has been elected vice-president and Eugene E. Mulhern has been appointed general counsel for GTE Communications Network Systems.

- Modular Computer Systems, Inc. has announced three appointments; Alexander W. Giles Jr. as chairman and chief executive officer, John C. Lobb as vice-chairman and Gabriel A. Rosica as president and chief operating officer.

- Harvey Cohen has been appointed president and chief operating officer of Silicon Systems, Inc. In addition, James M. Flanary has been pro-

moted to vice-president of manufacturing. Lawrence J. Alves has been appointed vice-president of finance and treasurer and David D. Haynes has been appointed vice-president of human resources.

- Walter B. Williams has been named vice-president of management information services for ILC Data Device Corp.

- Wayne Bartlett has been appointed vice-president and executive assistant to the president of Micro Power Systems.

- Michael A. Bellofiore has been appointed assistant vice-president of operations for T-Bar, Inc.

- B.K. Narayan and William Purdy have been named vice-presidents for American Management Systems, Inc.

- Richard J. Martin has been appointed vice-president of marketing for the Braegen Corp.

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## Vendors Warned of WP Quagmires

SCOTTSDALE, Ariz. — Small business systems manufacturers will be forced to incorporate word processing (WP) capability into their systems, but to do so will require surmounting major technical and marketing barriers, according to David Seigle of Basic Four Corp.

Seigle, vice-president of business planning for Basic Four, pointed to the small business sector's continual search for new markets to maintain profitability and the demand for WP capability across most industry lines as the key motivations for adding WP capability to these systems.

Speaking at the Dataquest Small Computer Industry Conference here recently, Seigle pointed to several technical barriers small business makers

would have to overcome to successfully accommodate WP.

System software, access methods, keyboards and printers must be redesigned in order to provide WP capabilities such as character delete, column move, scroll, wide forms and upper- and lower-case characters.

"Word processing requirements are technically demanding because the display must simulate a print page as closely as possible," Seigle noted.

### Marketing Barriers

Aside from surmounting technical problems, small business system makers must overcome marketing barriers. Sales prospects for the small business word processing system are very different from the typical small system

user, Seigle maintained. Businesses such as law firms and insurance companies that depend on large numbers of standard documents as working tools are examples.

Another select base of prospective customers includes mainframe users that have been considering adding a combination of dedicated WP and mini computer systems. These users must be persuaded that the WP function incorporated on a mini is a low-cost solution.

Overcoming resistance with this group will create a longer sell cycle because in "a larger company the corporate impact is broad and the decision is made at different levels with more time needed to channel information to the appropriate individuals," Seigle noted.

## Telex Plans To Match IBM

(Continued from Page 67)

duced its Series 80 tape system, compatible with IBM's 3420, at NCC, but did not begin shipment until January instead of last October as originally planned.

"The success of the Peripherals Division hinges on the success of the Series 80," Hochfeld said candidly. To date most of that division's revenue, which contributes about 25% to Telex's total revenue, has been derived from re-marketing IBM-compatible 3350 disk subsystems supplied by Sperry Univac.

In addition, Telex set up a separate OEM division last year to market its 6240 and 6253 tape systems. To date Telex has installed nearly 900 6240s, Hochfeld said.

Yet Telex's future is continually tied to IBM's future direction. "Our company is too small to develop leading-edge technology," Hochfeld conceded, "so we must acquire it from outside."

Right now one way Telex competes with IBM is by adding features to its products that IBM does not offer. Its 278E terminal has a message printer and a cut-sheet feeder that Hochfeld claims IBM does not have.

Moreover, the firm is constantly looking for ways to improve margins. Its table-top printer family, to be introduced in September, will contain four printed circuit boards instead of the 9 to 14 boards now standard in its printer products.

Although Hochfeld thinks Telex can continue to match IBM's market moves, he is watchful of several IBM developments which are sure to surface during the 1980s. These moves could easily put a crimp in the plug-compatible terminal market.

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Users of the first edition, originally offered in 1976, will note that this edition lists nearly twice as many data bases and has some 50% more pages. Several indexes speed location of desired information: a two-level subject index, producer index, processor index and data base name index. Another invaluable aid is a listing of data bases that are now outmoded, that have been replaced by more current data bases, or whose existence cannot be verified.

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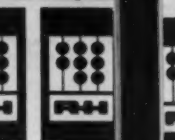
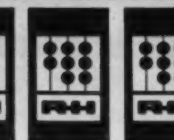
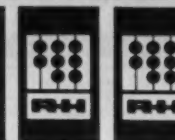
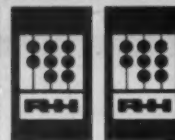
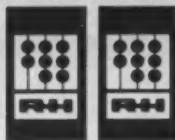
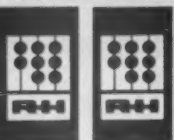
**PROGRAMMER / SYSTEMS ANALYST, \$18,000-\$45,000.** Opportunities from trainees to mgrs. New Jersey, Midland States & Nationwide. Live, work & play in areas of your choice; fishing, skiing, hiking, swimming, sailing, theatre, shore or mountain country. Plan your next career move. Contact Rusty Thayer, ARTHUR PERSONNEL, Suite 101, Forest Ave., Caldwell, NJ 07006 (201/256-4555).

**PROGRAMMERS / SYSTEMS ANALYSTS - Degree - \$18,000-\$45,000.** Rochester, corporate headquarters of many of the nation's leading companies, has many career opportunities, both locally & nationally. Send resume & geographical preference to B. C. Bush, TALENT SEARCH, 607 Temple Bldg., Rochester, NY 14604 (716/545-5895).

**PROGRAMMERS / SYSTEMS ANALYSTS, \$16,000-\$45,000.** Choice positions available in Pennsylvania & national locations. We have been placing EDP personnel for 15 years. Reply in strict confidence. John Scheirer, WEIR PERSONNEL SERVICES, 535 Court St., Reading, PA 19603 (215/376-8444).

**PROGRAMMERS / SYSTEMS ANALYSTS to \$35K.** Career opportunities coast to coast with emphasis on S. F. Bay area. Mail collect or send resume to Howard Rudiger, Pres., SUN VALLEY, 190 N. Wigot Lane, Walnut Creek, CA 94598 (415/933-0100).

**npc** NATIONAL PERSONNEL CONSULTANTS

EDP OPPORTUNITIES  
COAST TO COAST

Robert Half, staffed by EDP professionals for EDP professionals with 70 offices throughout the U.S., Canada & Great Britain, is the largest network of personnel consultants in the Data Processing field. And its establishment in 1948 also makes Robert Half the oldest. One call and you can search the local, national and international markets. All fees are paid by client companies, of course. The following is a partial listing of opportunities and locations:

SOUTHERN  
CALIFORNIALOS ANGELES  
PROGRAMMERS...\$18-25,000

Many excellent positions to choose from for 2+ yrs. COBOL experience. OS, DOS, HP 3000, etc. Many clients will reimburse relocation and interview expenses.

Contact Duncan White  
ROBERT HALF  
of Los Angeles,  
3600 Wilshire Blvd., Suite 1914  
Los Angeles, CA 90010  
(213) 386-6550

COMMERCE  
PROGRAMMER...To \$25,000

3+ years COBOL required on a medium-large computer system. Client utilizes Honeywell 2200 under OS 2000. Will pay relocation.

Contact Butch Dock  
ROBERT HALF  
of Los Angeles,  
8252 E. Telegraph Rd.  
Los Angeles, CA 90040  
(213) 721-2187

ORANGE  
COUNTYCOBOL  
CONVERSION \$341

Re-write old insurance system, document new, and debug entirely. CICS a plus.

Salary to \$28,000.

Contact Gary Dunlap  
ROBERT HALF  
of Orange County  
2333 N. Broadway, #200  
Santa Ana, CA 92706  
(714) 835-4103

## TAMPA

## SYS PROG

Complete responsibility DOS/VS-Systems-PFT's. \$24,000

## PROG/ANAL

Mfg. appl. in DOS/VS-on line a must-COBOL. To \$22,000

## PERF ANAL

Min. 3 years exp. doing it on 370 OS or MVS. To \$26,000

## BANKING

Burr or IBM-Min 2 yrs DDA-Instal. Loans. To \$20,000

## PROG/ANAL

Natl. Corp. needs 370/OS with acctg. exp. exp-COBOL. \$20,000

## AUDIT

Any industry bgd-Min. 2 yrs. exp. and COBOL. \$22,000

## MFG PROG

Any mini-Assembler or Basic COBOL nice-good growth. \$20,000

Stan Allen  
ROBERT HALF  
of Tampa, Inc.  
1311 North Westshore Blvd.  
Tampa, FL 33607  
(813) 876-4191

LOUISVILLE  
MIS DIRECTOR

Louisville base firm is looking for an individual with an Acute background. Will have responsibilities which include working with clients on their activities and person needs. Ideal person will have completed 5 parts of the ASA. Excellent benefits. Interview and relocation paid. Starting salary \$30,000+.

OPERATIONS  
RESEARCH ANALYST

Large Ky. manufacturer is seeking a degreed person in Math or Comp. Science. 3-5 years experience with Linear Programming. Statistical analyst and systems design. Interview and relocation paid. Excellent benefits with a starting salary to \$28,500+.

## D.R. SUPERVISOR

Large mfg. firm outside the Louisville area is looking for systems programmer to move into mgmt. 2-3 years experience Systems 3 or 34 with a background in Personnel and Acct'g systems. New opening with lots of growth. Outstanding benefits and a starting salary to \$18,000.

Tom Williams  
ROBERT HALF  
of Louisville, Inc.  
1610 Commonwealth Bldg.  
Louisville, KY 40202  
(502) 585-1751

## MINNEAPOLIS

INTERNATIONAL  
SYS/ANAL

Unique opportunity for an RPG-II analyst to travel world-wide. Would prefer past exp on either IBM Sys 3, Sys 34 or Sys 32. Perfect candidate will be competent in Spanish. Travel approx 30% for Fortune 500. Salary Mid \$20's.

## PROJECT MGR

Local client is seeking an individual with mktg and systems bgd. Resp for systems planning and dvrnt in a large IBM shop. DOS and teleprocessing exp a real plus. No coding. Salary to \$30,000.

## SOFTWARE HOUSE

Natl software house with strong local office is seeking analysts with extensive IMS and COBOL exp. Position allows working with many clients. Need for good communication skills. Excellent oppy. Salary to \$30,000.

PROG'S THRU  
SR. ANALYST

Fortune 500 firm seeks qualified applicants for many new positions created via expansion. Prog's req 1+ yrs exp in COBOL or RPG-II. Analysts and Sr. Analysts require 2+ yrs IBM COBOL, pref to those with CICS. Pay and benefits excellent.

Ron Dykstra  
ROBERT HALF  
of Minneapolis, Inc.  
2236 IDS Center  
Minneapolis, MN 55402  
(612) 338-9001

PALO ALTO  
NORTHERN  
CALIFORNIADATA PROCESSING  
PROFESSIONALS

If you are a Data Processing professional with at least one year's experience, consider one of the many positions currently available.

COBOL PROGRAMMER/  
ANALYST

IBM or Burroughs experience in a manufacturing or financial environment.

## RPG II MANAGERS OR PROG.

System 31/50 or System 32, 34 installations.

## EDP AUDITORS

IBM OS & DOS environments require EDP Auditors at all levels.

## SYSTEMS PROGRAMMERS

IBM OS & DOS needed immediately.

## DATA BASE ANALYST

Experience with DMS, DL1, ADABAS, IMS or CICS.

## COBOL PROG./ANALYST

IBM or Burroughs experience in a manufacturing or financial environment.

Over 1000 positions in Northern California are currently open. If you have experience in:

Banking  
Manufacturing  
Retail  
Insurance

Client companies pay interviewing and relocation expenses. Call us collect today.

Rich Abreau or  
Jim Dupre  
ROBERT HALF  
of Northern California  
2 Palo Alto Sq., #212  
Palo Alto, CA 94304  
(415) 493-6700

## SEATTLE

WASHINGTON bank staffing for major systems development seeks several prog/analysts with 3+ years IBM 370 OS COBOL experience. Loans, payroll, DDA, online teller & item processing background preferred. IMS CICS a plus. To \$24,000 DOE.

ALASKA banks seek prog/analysts with 2+ years IBM 370 OS BAL & COBOL or BURROUGHS B4000 COBOL experience. Banking background a plus. To \$26,000 plus relocation.

MONTANA insurance firm seeks systems programmer and applications prog/analyst with 2+ yrs. IBM 370 COBOL or ALC and CICS experience.

To \$21,000 DOE.

Ray Magill  
ROBERT HALF  
of Seattle, Inc.  
1301-5th Avenue Suite #2626  
Seattle, WA 98101  
(206) 842-9800

BOSTON  
MGR. TECH SERVICES

Leading distributive serv. co. seeks top sys. software mgr. to direct support group. MVS, IMS, OS/VS, CICS bgd. pref. Will plan, manage, evaluate & budget. Unlimited career oppy. for strong tech. mgr. Salary \$37,000.

## SR. SYS. PROG.

Nat. finl. serv. org. seeks highly skilled sys. prog. to implement MVS, CICS, PANVALET, VSAM. Data base exp. a plus. Will work as independent tech specialist. Salary \$32,000.

## HONEYWELL 6000 COBOL

Major mfr. requires solid analyst/prog. to design, code & implement new bus. sys. COBOL or FORTRAN exp. desirable. Interc. & reloc. exp. paid. Proj. mgmt. potential within 1 yr. Salary \$22,000.

## UNIVAC APR SUPPORT

Fast-growing P.O.S. vendor searching for articulate business-like & self-motivated analyst/prog. to support wide variety of new proj. UNIVAC 9030 OS/3 environment. Interc. & reloc. exp. paid. Excellent oppy. to move up. Salary \$22,000.

Gerry Battista  
ROBERT HALF  
of Boston, Inc.  
160 Summer Street  
Boston, MA 02110  
(617) 423-1288

BUFFALO  
LEAD PROGRAMMER

Outstanding corporate level position for Western NY consumer goods mfr. Expansion position for self starter with PL1 bgd. Will have resp. for programming staff in both maintenance and development programming areas. Sophisticated IBM 370 installation. Salary \$23,000.

## PROJECT LEADER

Div. of nat. mfr. needs analyst with concentration of finl. sys. design & implementation. Must be able to direct staff on project orientation. Hvy. emphasis on user definition for finl. mgmt. staff. Will be backup to MIS Mgr. Salary \$26,000.

## EDP AUDIT MANAGER

Large finl. institution loc. in Western NY needs savvy EDP audit mgr. to direct small staff loc. throughout NY state. Bkgd. must include proven track record in organizing dept. & administrative skills - the technical side of audit & sys. implementation. Minimal lrv. Salary \$30,000.

MIS mgr. needs programmer with mfg. sys. bgd. Excellent hi-visibility position offers oppy. to work into project with emphasis on invy. mgmt. sys. COBOL is the key utilizing medium size hardware exp. Sophisticated data base presently being implemented in this state-of-the-art environment. To \$23,000.

## PROGRAMMER ANALYST

Retail co. with small DP Dept. using Prime 400 computer desires person to "do it all." COBOL, RPG II & on-line systems expertise a must. Salary \$23,000.

Pam Siegal  
ROBERT HALF  
of Buffalo, Inc.  
1310 Liberty Bank Bldg.  
Buffalo, NY 14202  
(716) 842-9800

## HARTFORD

## TELECOMM. ADVISOR

Research, evaluate, design and develop Corp. Telecom. software syst. for major CT based firm (ACT 3, TCAM, NCP, CICS). Syst. Prog. plus T.P. exp. To \$30,000.

DB/DC SOFTWARE  
RESEARCH

Direct the eval., development, and installation of DB/DC software. Major finl. firm seeks talented admin. to head staff and consult. CICS, DMS, DL1, and IMS in MVS/VSAM environ. To \$26,000.

## COBOL PROG./ANALYST

Superior CT based corp. expanding staff for 1980 dev. projects. Opty' for dynamic OS COBOL prog/anal. Promotion to syst. anal. or proj. ldr. within yr. To \$23,000.

## PROJECT LEADER

Oppy in VT for indiv. to direct growing staff in gen'l. bus. systems. IBM, CICS environment pref'd. Any industry bgd. OK! Position open due to promotion. To \$25,000.

## MFG. CONSULTANT

CT opening on internal mgmt. staff to provide long term mfg. acq. systs. support. Excell. suburban recreational environment. To \$30,000.

## HARDWARE PLANNING

CT ophy. for indiv. with broad exp. eval. evaluation, justification, install. exp. Will direct future hardware, software planning for multi-mainframe data ctr. To \$30,000.

## SR. SYST. SPEC.

CT corp. installing 4300-distributed processing systems. Indiv. with related software exp. qualifies for excellent suburban location. To \$28,000+.

Stan Durban  
Paul Meisner  
ROBERT HALF  
of Hartford, Inc.  
111 Pearl Street  
Hartford, CT 06103  
(203) 278-7170

## PROVIDENCE

## D.R. MANAGER

Rapidly growing mfg. co. seeks aggressive communicator with MBA to head IBM 4331 shop. Hvy. MRP & on-line expertise. Indiv. will sup. staff of 15. President of this fine firm seeks positive, modern thinking DP "pro." Salary \$38,000.

## D.R. MANAGER

General hardware & BASIC exp. is key to running growth-oriented co.'s. new DP installation. Ability to work closely with users & service bureau. Challenging oppy. for high performance doer. Salary \$30,000.

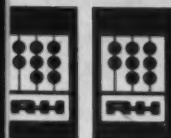
## SYS. PROG.

R.I. state-of-the-art ins. installation needs strong software prog. Co. requires min. 2 yrs. OS internals with exp. in generation, maintenance & tuning of MVS. Ophy. unlimited in this "Blue Chip" firm. Salary \$25,000.

## PROG/ANALYST

Retail co. with small DP Dept. using Prime 400 computer desires person to "do it all." COBOL, RPG II & on-line systems expertise a must. Salary \$23,000.

Dee Ecker  
ROBERT HALF  
of Providence, Inc.  
400 Turks Head Bldg.  
Providence, RI 02903  
(401) 274-6700



# ROBERT HALF

## NEW YORK

### SR. ANALYST

Advancement to upper level management possible with this FORTUNE 100 consumer products firm. 2+ years COSOL programming and 2+ years SYSTEMS DESIGN experience. Large scale HOMEWELL, a definite plus. Responsible for the design, implementation and testing of varied applications. Superior advancement opportunity \$38,000

### 34 MGR

Ground floor opportunity for start alone professional. 2+ years RPG II programming. SYSTEM 34 or BASIC programming is a plus. Organize and direct newly installed SYSTEM 34. Presently all programming being done by outside service. Highly visible with room for growth. \$30,000

### NEAT 3

Newly created position offers challenge and the opportunity to work on meaningful assignments. 3+ years NEAT 3 programming experience. NCR CRITERION experience is a plus. Responsibilities include development and enhancement programming. Well organized environment. \$25,000

### BASIC

This could be the career climbing opportunity you've been looking for. 2+ years BASIC programming experience. DEC 11 and any management experience is a plus. Manage and aid in installation of DEC POP 11/34. Programming is being done by software house. Very dynamic. \$28,000

### FORTHAN

Key position with integral responsibilities. 1+ years FORTHAN programming and TIME-SHARING experience. Aid in design and implementation of BANKING systems on multi-DEC 10 TIME-SHARING system. Heavy user interface. \$23,000

### COBOL

Line up your future in this prestigious position. 1+ years COBOL programming experience. BAL or brokerage experience is a plus. Hardware includes 3031, 370/148 OS, CICS. Outstanding benefits include an excellent BONUS and 4 weeks VACATION. \$26,000

Marty Amato  
or Peggy Cooper  
ROBERT HALF  
of New York, Inc.  
522 Fifth Avenue  
New York, NY 10036  
(212) 221-0500

## NEW ORLEANS

### FINANCIAL SYSTEMS ANALYST

Energy related firm. Solid bus. & Sys. design exp. To \$30,000

### SR. PROGRAMMER

Multi million \$ finl firm. 2 yrs. app'l exp. Strong COBOL. Batch or on line. To \$20,000

### PROGRAMMER/ANALYST

Internal Mfg. firm. 2+ yrs. COBOL exp. Excellent benefits. To \$20,000

### Programmers

1+ yrs. applications exp. COBOL or NEAT 3. To \$18,000

Jerro Brown  
ROBERT HALF  
of Louisiana, Inc.  
135 St. Charles Ave., #1020  
New Orleans, LA 70130  
(504) 524-3773

## KANSAS CITY

### DEPUTY DIRECTOR

Publicly held midwestern manufacturer/distribution firm with multiple divisions needs strong organizer and systems implementer. Will be responsible for identifying of divisional needs and the standardization of divisions. Must be familiar with structure design techniques and both on line and data base design. High visibility to corporate execs. and movement to director position in eighteen months. Salary high \$30's.

### LEAD ANALYST

A strong leader will find tremendous challenge with this listed midwestern manufacturer. Prior manufacturing applications required with preference given to MRP, production scheduling, and inventory control. On line data base experience a plus. Salary to \$30,000

### SYSTEMS PROGRAMMER

Three years OS software with one year MVS support required. Person will assume lead position in converting OS/VS 1 shop to current state of the art MVS. Job is forerunner of manager of tech support. Salary to \$32,000.

### SYSTEMS PROGRAMMER

Excellent opportunity for an experienced DOS/VS systems programmer to install a brand new 4331 with a 4341 on order. Will have complete responsibility to develop a technical support department. Firm is committed to building a large communications network utilizing CICS. Salary to \$31,000.

### EDP CONSULTANT

Degree required with 2 plus years of design experience. Feasibility studies, system design, and EDP audits for clients of this regional CPA firm. No overnight travel required. Salary to \$28,000.

### EDP AUDITOR

Start a department from scratch at this midwestern utility. Company seeks individual capable of leading them from start up to the development of a full EDP audit function. Must be capable of working with top management and an outside audit firm. Salary to high \$20's.

### DP MANAGER

Small Kansas City base manufacturer needs the hands on door willing to make an impact. Person will be in charge of installing their first DP system most likely choice IBM system 34. Person will be charged with design of computer facility selection of staff and determination of which systems will be implemented first. Work directly for the president. Salary Mid \$20's.

### SYSTEMS ANALYST

Rapidly expanding midwestern insurance company seeks a proven communicator able to work with top level management in defining new systems. Must have a proven track record of bringing home large on line data base oriented systems on time within budget. Insurance background is preferred in either property and casualty or life. Salary to the high \$20's.

### JUNIOR SOFTWARE

Two years in data processing with one year of OS Assembler qualifies. Solid operational background and OS JCL is a plus. Excellent opportunity for the application programmer to move into software. Salary to \$20,000.

George Wiersman  
ROBERT HALF  
of Kansas City, Inc.  
127 West 10th Street  
Kansas City, MO 64105  
(918) 474-4583

## SAN ANTONIO

### SYSTEMS ENGINEER

BSCS, BSME, or BSCE 8+ Yrs Fight Simulation exp. Proficiency in Fortran Programming. Supervisory experience in large scale environment. Texas. \$38,000+.

### PROGRAMMER ANALYST

2+ Yrs experience. HW interface. Assembly, Cobol or RPG. Univac, Interdata, IBM, NCR or Bur's. Must Demonstrate ability to design, code and check out systems software. Texas. \$25,000.

### SYSTEMS PROGRAMMER

NCR Criterion—Use VRX, TOTAL, TICS large POS network. Cobol. Responsible for all communications and system software. South. \$24,000.

### PROGRAMMER

Small shop environment. Cobol or RPG-on line CCP. 2+ Yrs. Sys. 3. Good learning attitude. Texas. \$15,000+.

### PERSON AVAILABLE

Ph.D.—Elect. Eng., M.S. Physics, B.S.—Math, 14 Yrs. Management Experience in Engineering Systems and Business Analysis Systems design, Aerospace and Chemical industry bkg. Seeks position as Mgr. of Management Sci. Information and Operations Research systems. \$40,000+

### ROBERT HALF

of San Antonio, Inc.  
First Nat'l Bank Bldg #340  
San Antonio, TX 78201  
(812) 736-2487

## CHICAGO

### INEXPERIENCED PROGRAMMER WANTED

Prestigious manufacturer has an excellent opportunity for a ONE YEAR PERSON to get a chance to grow in a progressive IBM COBOL shop. You could be a RPG2 programmer with one year in manufacturing or a new Computer Science graduate with coop experience in manufacturing. Salary to \$20,000

### Amy Nielson

ROBERT HALF  
of Chicago  
35 E. Wacker Dr.  
Chicago, IL 60601  
(312) 782-6930

## PHOENIX

### SENIOR PROGRAMMER

The successful candidate will be very analytical, a self starter who can take initiative and work well in an independent role. Two years COBOL programming on large systems. Salary \$18,000 to \$25,000.

### Roc Rogers

ROBERT HALF  
of Phoenix, Inc.  
3550 N. Central Ave #1504  
Phoenix, AZ 85012  
(602) 264-6488

## MEMPHIS

### SR. SYSTEMS ANALYST

Are you currently designing POS systems? Here's a chance to join a growing retail corporation installing POS systems nationwide. Unlimited career potential. Salary \$30,000.

### Call Ken Allen

or  
write in confidence to  
ROBERT HALF  
of Memphis, Inc.  
825 Ridge Lake Blvd. Suite 350  
Memphis, TN 38138  
(901) 853-8900

## ATLANTA

### PROJECT LEADER

\$24,000  
Prestigious Financial Institution seeks aggressive, take-charge person with strong exp. to control major projects and supervise Programmers and Analysts. Qualification pref. COBOL, DDA, CIP, OS/VS-1. Exceptional opportunity for advancement.

### PROG/ANALYST

\$18,000  
Major international Corp. has several openings for those who possess: Financial and/or Manufacturing systems design and programming ability using RPG II. Exp. with CCP, Syst. 3/150 is a plus, but will train qualified applicants.

### PROG/ANALYST

\$24,000  
Outstanding opportunity for growth and work on many new systems in a State-of-the-Art shop. Qualifications preferred: COBOL, OS/VS, on-line and Gen. Business applications. Must have desire to advance as Corp. growth is dynamic.

### Roy Jennings

ROBERT HALF  
of Atlanta, Inc.  
3379 Peachtree Rd. N.E.  
Atlanta, GA 30328  
(404) 268-2153

## DALLAS

The demand for EDP professionals continues extremely high in the Dallas area. We have immediate openings at all levels... salary ranges. All fees, interview, and relocation expenses are completely paid for by our client companies...

Below are a few of the large variety of positions (many exclusively ours) currently available:

### LEAD SYSTEMS

PROGRAMMER...To \$34,000  
International & gas co. - 3033's - MVS - BAS/VS - TSO - VSPC - SNA...large professional technical staff with a company that appreciates their technicians.

### SENIOR SYSTEMS

PROGRAMMER...To \$28,500  
Manufacturer...3033's. Develop large-scale state of the art peripheral software systems...One of the best tech staffs in this area.

### SYSTEMS

PROGRAMMER...To \$37,000  
Financial co...large, multi CPU DOS/VS - CICS - Power/VS shop...low-keyed, stable staff, growing installation.

### PROGRAMMER/ANALYST

.....To: \$25,000  
N. Dallas Manufacturer...staffing new development systems group...MVS - TSO/SPF - CICS - DL/I - COBOL...growth situation.

### SR. PROGRAMMER/ANALYST

.....To: \$24,000  
"Blue-chip" transportation company has ground-floor positions in a new large scale installation...Participate in design and implementation of an international teleprocessing network...Push facilities.

### PROGRAMMER/ANALYST

.....To: \$19,500  
Blue-chip manufacturer...370/148 - DOS/VS - COBOL - ACL...seeking career oriented DP professional for a new development effort utilizing CICS/VS and a remote terminal network...4341's coming soon for implementing their long range DP plans.

Call or send your resume, on a STRICTLY CONFIDENTIAL basis to:

Ron Urbach  
ROBERT HALF  
of Dallas, Inc.  
Two Northpark East  
Suite 750  
Dallas, TX 75231  
(214) 383-3300

## DENVER

### ENERGY

Denver division of a world wide energy corp. has a new opening for a systems analyst. Must have an in-depth knowledge of accounting systems through implementation. Super growth potential. Start \$27,000 range. FEE PAID.

### DATA BASE

Large Denver based wholesaler needs a data base analyst with at least 2 yrs. design exp. Will look at IMS, DBMS, or TOTAL background. Person will become the DBA. Excellent career opportunity. Start \$25,000 range. FEE PAID.

There are many other good career opportunities currently available in the Rocky Mt. area. If you are interested in obtaining more information please contact:

Steve Newman  
ROBERT HALF  
of Denver, Inc.  
2 Park Central  
Denver, CO 80202  
(303) 629-1010

## SAN FRANCISCO

Our clients are offering fitting, proper and due opportunities for qualified professional candidates. All interview, relocation and fees are paid by management.

### SYSTEMS ANALYSTS

Many openings exist in the Bay Area for experienced, professional systems analysts. Good communications, two+ years experience user contact skills required.

### SYSTEMS PROGRAMMER

Install, gen, select, develop, modify, debug, tune. DOS and OS people needed to help state-of-the-art shops with packages and products.

### SYSTEMS SPECIALIST

10 years DP solid in design/anal programming, project management, and administration. Up the ranks type with fair for people. IBM 3033 VS with MASP environment +++++.

### COBOL PROGRAMMER

Urgent need for qualified Fin/ MFG with 2 or more years experience in an IBM environment. Applications and documentation exposure with some IMS ideal.

### RPG II PROG/ANL

Several clients thru-out the Bay Area are seeking experienced professionals.

### TELECOMMUNICATIONS ANALYSTS

Excellent opportunity to join a team of professionals implementing systems in IBM IMS/VS, DB/DC prestige environment.

### OUR CLIENTS ASSUME ALL FEES.

### Jerry Anderson

or  
Bob Couch  
ROBERT HALF  
of Northern California, Inc.  
111 Pine St.  
San Francisco, CA 94111  
(415) 434-1900

## ST. LOUIS

### MANAGER

FINANCIAL SYSTEMS  
To \$35,000  
At least 6 years accounting or financial analysis/systems with the last 2 yrs. in an EDP environment, a 4 year degree, and desire for advancement qualifies you for this UNIQUE POSITION

### SALES REPS

To \$25,000+ Comm.  
Strong EDP marketing/sales engineering systems. At least 3 years in IBM OS, IMS environment, a 4 year degree, and desire for advancement qualifies you for this UNIQUE POSITION

### SENIOR ANALYST

To \$30,000  
Will develop marketing and engineering systems. At least 3 years in IBM OS, IMS environment. EXCELLENT GROWTH!

### SYSTEMS PROGRAMMERS

To \$32,000  
OS, DOS software experience DL/I or IMS, CICS a plus. Medium and large shops.

### PROGRAMMER ANALYSTS

To \$28,000  
Manufacturing and Financial applications. Any COBOL, BAL, RPG II experience qualifies. College degree a big plus!

### Charles Shaffer

ROBERT HALF  
of St. Louis, Inc.  
7733 Forsyth Blvd.  
St. Louis, MO 63105  
(314) 727-1536

## MILWAUKEE

### DP MANAGER

Ready to manage your own S/3-12 shop with RPG II programming? Do you know manufacturing/financial systems design and implementation? Any OCL and CCP experience is a plus. \$20-25,000

### MGR SYSTEMS DEVELOPMENT

We are searching for a competent, professional DP Systems Development Manager who has the ability and desire to build a department around a new IBM 4331 with on-line systems. \$30-40,000

### Dave Weiner or Stan Munro

ROBERT HALF  
of Wisconsin  
777 E. Wisconsin Ave.  
Milwaukee, WI 53202  
(414) 271-4233

## W. MICHIGAN

### PROGRAMMER ANALYST

Senior level, project control exposure, IBM OS a plus. Growth shop, low turnover, non-union mfg. \$25,000.

### SENIOR ANALYST

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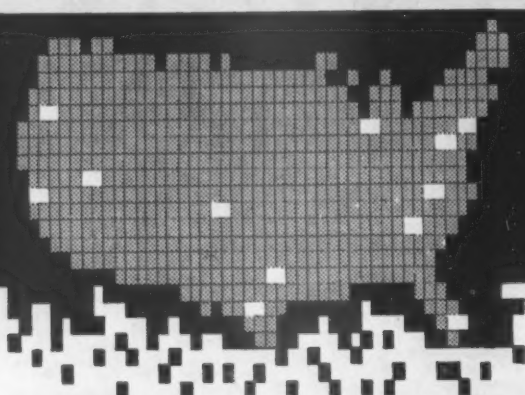
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\*An understanding of systems design in one or more application areas.

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# Computer Development Engineers & Programmers

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### CPU Designer

Designers to play a strong role in resolving architectural issues and use good judgement in making design trade-offs and implementing logic. Ideal candidates will have related degree plus experience in logic design and test, be capable of defining new computer architecture and be familiar with TTL, ECL and MOS technologies.

### Peripheral Interface Design

Designers with knowledge of minicomputer peripherals to develop forward looking interfaces (especially disc, tape and communication interfaces).

### Hardware Product Support

Diagnostic programmers to design, implement, test and document test program diagnostics and microprograms. You will apply your knowledge of computers and peripherals to a variety of complex problems, and will develop complete knowledge of the processor from an assembly language programming point of view.

Ideal candidates will have related degree and be familiar with at least one minicomputer peripheral and have previous design experience with MSI/LSI.

Additional development work is being done in the areas of:

- IC Design
- LSI, MOS circuit simulation
- Multiprocessor systems development
- Microprocessor firmware for I/O

As a Fortune 500 high technology leader, Perkin-Elmer offers excellent salaries and an extremely competitive benefits package including profit sharing, dental assistance and paid relocation. We are very favorably located on the North Jersey Shore (Monmouth County). Our employees work in a residential, non-industrial environment and enjoy a myriad of recreational opportunities plus easy access to the cultural resources of New York City. Call John Travers collect at (201) 747-7300 or send your resume to: Perkin-Elmer, Computer Operations, 106 Apple Street, Tinton Falls, New Jersey 07724. An equal opportunity employer m/f

## Software Development

### Operating Systems

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### Compiler Development

Ongoing and imminent projects include optimizing and fast development compilers and development support tools for FORTRAN, PASCAL, and ADA. Candidates should have a strong background in compiler construction from either industry or academic experience as well as proficiency in assembly language and FORTRAN or PASCAL.

### Software Quality Assurance

Systems programmers to perform functional testing and validation of standard software products used in the full range of hardware product configurations. Computer Science, Math or EE training with related experience in maintenance or design and testing of systems software; prefer extensive user oriented experience.

### Distributed Systems Technologist

Successful candidate for this extremely challenging position will perform exploratory work in the area of fiber optic communications systems, local networking, concurrent programming languages, and data management. Must have MS or equivalent experience in EE or Computer Science and be experienced in systems programming on microcomputers and microprocessors. Knowledge of data communications protocols and distributed processing concepts highly desirable.

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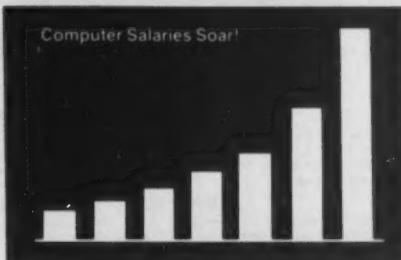
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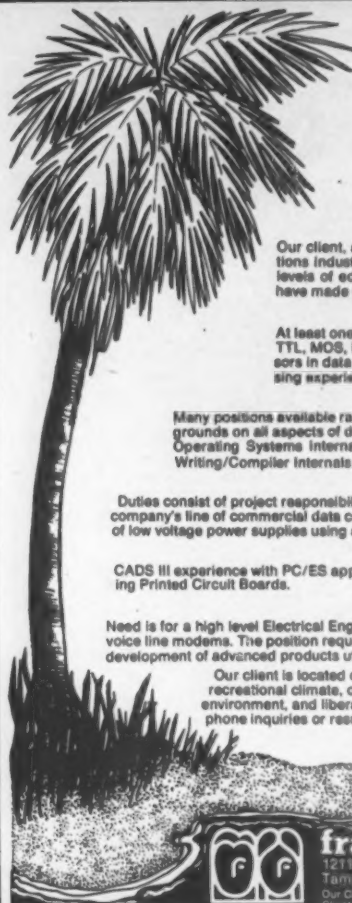
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Requires at least 3 years previous experience in data processing systems support. Previous experience in UCC/FCS desirable. Knowledge of accounting procedures required. Please send resume with salary requirements to: Human Resources Department, Exchange Bank and Trust Company of Florida, P.O. Box 1809, Tampa, Florida 33601-An Equal Opportunity Employer

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Gordon G. Lewis  
Director of Computer Center  
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Master's degree in Computer Science or Computer related field required. Knowledge of Basic-Plus programming language and experience with DEC POP 11/70 Computer Science.

Send resume to:  
Mr. Carl L. Hime  
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## DATA PROCESSORS

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CPCS: Programmer/Analyst	26,000

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The Valspar Corporation, a Minneapolis based producer of consumer paints has expanded and needs to add 2 Data Entry Operators to our Second Shift. Hours are flexible to meet your needs: 3 PM - 10:30 PM or 3:30 PM - 11 PM or 4 PM - Midnight.

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**SR. ANALYSTS, \$35,000.** "Fortune 100" client seeks Sr. Anal/Prog's for challenging involvement in team-oriented environment to design on-line data base systems & be responsible for dvtmt of applications programming. Seeks 2-7 yrs exp in DP design & prog & knowledge of OS/VS1, IMS or CICS/VS. Refer NS.

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**DIRECTOR/SYSTEMS, \$30,000 - \$35,000.** Ohio \$260mm multi-div corp environment seeks candidate to direct dvtmt of new & existing systems. IBM/COBOL/project planning B/G. Data Base/on-line preferred. Degree. Refer AT.

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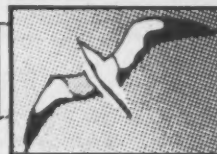
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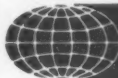
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Electronics

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## DEC PDP/VAX Programmer/Analyst

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## DIRECTOR OF COMPUTING AND INFORMATION SYSTEMS East Carolina University

The director is responsible for managing major systems development and computing support for the University. It is expected that strong leadership be provided for all areas of the University environment including finance, research, and Medical School in an on-line data base management system.

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## E-Systems ECI Division has Software Opportunities

ECI's high technology projects in weapon systems' development and RADAR signal processing require software engineer/programmers with credentials in real-time minicomputer and distributed microprocessor systems. These positions require a Bachelors or Masters degree in CS/EE/Math and 2-5 years' experience in assembler and/or CMS-2. Familiarity with structural design and programming techniques a must!

If you feel you qualify, please send your resume to Mr. W. J. Peterson, E-Systems ECI Division, P. O. Box 12248, St. Petersburg, Florida 33733 or you may call Ron Damer COLLECT (813) 381-2000, Ext. 3661.



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Suite 700, One Cherry Hill Mall  
Cherry Hill, New Jersey 08002  
(609) 667-4493

RSVP SERVICES, Dept. C  
Suite 300, Dublin Hall  
1777 Walton Road  
Blue Bell, Penna. 19422  
(215) 629-0595

### RSVP SERVICES

Employment Agency for Computer Professionals



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Philadelphia Needs  
Competent/Ambitious  
Career Oriented  
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Below is a partial listing of our current openings:

SR SYS ANALYST TO 32K

Fin'l design, IBM 370 w/database.

SYS PROGRAMMER TO 31K

DBS/VIS & CICS internals, IBM 370.

SYSTEMS ANALYST TO 30K

Fin'l sys. 370 w/prop exp reqd.

SR PROG/ANALYST TO 29K

Cobol w/IBM 370, CICS, BAL & PL/I.

SOFTWARE ENG TO 29K

Microprocessor bkgd w/Z80 or 8080.

SYSTEMS ANALYST TO 28K

Banking or insur bkgd, Fin'l design.

PROG/ANALYST TO 25K

NEAT 3 w/MCR CRITERION, Fin'l

PROGRAMMER TO 20K

Solid Cobol w/IBM 370, CICS +.

For full details of any of our FEE PAID positions, please call for immediate interview appointment or forward resume to our Recruitment Specialist. Completely Confidential

## ROBERT HALF

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2000 Market St., Suite 706  
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(215) 354-4550

## PACIFIC NORTHWEST

Are you interested in pursuing a rewarding career in a stimulating work environment while enjoying the casual Pacific Northwest life style?

Washington Public Power Supply System is seeking computer professionals with two or more years experience. Successful candidates will have the opportunity to develop information systems on IBM 3033 hardware and PRIME 750 computers utilizing COBOL and Database Management languages.

This exciting opportunity comes complete with competitive salary, benefit package and relocation assistance.

For consideration, contact Juan Aguilar at (800) 541-6713 or send resume and salary history in confidence to: J.J. Aguilar, DEPT. K-80, Washington Public Power Supply System, P.O. Box 968, Richland, WA 99352. An affirmative action employer.

WPPSS

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PARADYNE, an international recognized leader in the design and manufacture of a highly advanced, unique Data Communications product line, is seeking an aggressive Sales Professional for St. Paul, Cleveland, Cincinnati, St. Louis, and Minneapolis areas.

### Requirements include:

- Experience in Direct Sales to the End User community with emphasis in Data Communications.
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- Minimum of 3-5 years sales experience with a proven track record.
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FLORIDA SOFTWARE SERVICES, an acknowledged leader with a reputation for providing the finest software and support to the banking industry has openings at its corporate headquarters in Orlando. Due to rapid growth, a new customer service department is being formed.

Challenging opportunities now exist for individuals with two or more years COBOL experience on IBM or Burroughs equipment. Ideal candidates will be highly motivated, have a financial background and be willing to travel on company business. Individuals selected will play an active and creative role in the development and installation of our application line.

To explore our excellent salaries, comprehensive benefits and liberal relocation package send resume to:

**FLORIDA SOFTWARE SERVICES, INC.**

Attn: Jerry Jason  
P.O. Box 2269  
Orlando, Florida 32802

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**FLORIDA  
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**PROCESS COMPUTER ENGINEER** ..... \$40,000  
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A 40% tax protected bonus plus living subsidies, family status and an American community of thousands with all the amenities imaginable.

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<b>PROGRAMMER/ANALYSTS</b> .....	\$30,000	\$42,000
<b>SYSTEMS PROGRAMMERS</b> .....	\$35,000	\$49,000

For full details, call or write Computer Specialists Tom Fischer, Larry Ledet or Ron Timm at (713) 658-9888.

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We provide nationwide executive Data Processing placements in banking. Phone or send resume in confidence to John Denton. In the east or midwest, call New York (212) 926-7838 or Chicago (312) 283-2568. All fees assumed by client banks.

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#### FRESNO, CALIFORNIA GATEWAY TO THE SIERRAS

Intermediate programmer for development of cost accounting system for farms, contractors, and manufacturers. Experience in on-line systems desirable, preferably with mini-computers. Join a new fast moving company on the ground floor. Send resume to:

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Sigma/500 experience desirable, immediate openings nationwide, excellent salary, good benefits. CALL/WRITE Don Hyde - 1-800-954-3128.

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- Programmers-Cobol a/c PL/1 RPG Fortran DL/1 RPG II
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**SALARY \$18,000 to \$40,000**  
All interview and relocation expenses paid  
**NO FEES**

Our staff has a total of 23 years experience in the placement of EDP Professionals and 18 years in the D.P. industry in programming, analysis and management.

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#### OS/VS1 CICS/VS

Aggressive commercial bank in southeastern Louisiana with small town atmosphere needs expertise in above to help design on-line systems and installation of Florida Software's banking package.

Requires experience in VS1 for systems programmer position. Programmers familiar with CICS, COBOL, Telecommunications. Florida Software experience a plus. Salary commensurate with experience.

**Personnel Department  
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#### EXECUTIVE DIRECTOR

Immediate opening at the Area Two Educational Computer Center for an executive director. The Area Two Educational Computer Center provides instructional time-sharing for 28 school districts in north central Iowa. It also provides administrative time-sharing for the Mason City Community School District, the North Iowa Area Community College, and the Area Education Agency. Salary range is open for negotiation; competitive with industry. B.S. in Computer Science preferred. 1-2 years experience, preferably with DEC PDP-11/70 and RSTS. Management experience necessary. Please send letter and resume to:

**Charles E. Ruchling  
Chairman, ATTEC Board of Directors  
120 E. State Street  
Mason City, Iowa 50401  
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#### COMPUTER SCIENCE FACULTY

full-time for Sept. 1980 undergraduate classes and for curriculum development. Master's in Computer Science or closely related field required. \$16,000 to \$22,000 per academic year. Send resume's and graduate transcripts to Dr. Hilburn, PDAAC, Embury-Riddle Aeronautical University, Regional Airport, Daytona Beach FL 32034. An Equal Opportunity/Affirmative Action Employer.

#### Come to Berlin, N.H.

Looking for more than just a job? Try helping northern New Hampshire's largest commercial bank get full value out of its new IBM System 34. We need a hard-working programmer/analyst with two years of RPG/COBOL experience. We are offering an unusual professional challenge and an uncultured New England lifestyle in the heart of the White Mountains resort area. Send resume and salary requirements to Treasurer, The Berlin City Bank, Berlin, N.H. 03570.

## Director Sales & Marketing

Do you have the experience, talent, and drive to spearhead the marketing activities of a small, well-financed medical products company that plans growth from \$2 million to \$10 million in sales within the next four years?

Cyborg Corporation has a dominant position in an exciting new area of medical technology -- Behavioral Medicine. We have a well-established product line which includes instruments, computer-based systems, and applications software, and are experiencing significant growth.

The momentum we have developed, based primarily on superior technology and sound business judgement, now needs aggressive, well thought-out marketing.

If you feel you can be effective in communicating the benefits of new technological products to the medical community (institutional and private practitioner), and are eager to assume complete responsibility for all sales and marketing activities, then we can offer a novel and exciting opportunity. Ideal candidate will have 7-10 years' experience with a well-managed, marketing oriented, technical products or health care company. Compensation consists of base salary, cash bonus and substantial equity participation.

Send resume to Joseph J. Caruso, President, CYBORG CORPORATION, 342 Western Avenue, Boston, MA 02135.

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## Sr. Market Forecaster

#### DATA COMMUNICATIONS EQUIPMENT

As a consultant to top management, you will be responsible for the compilation of the long term and short term sales forecasts and conduct studies to determine the market potential for new products and new applications for our existing equipment.

The successful candidate should have an undergraduate degree in Economics/Mathematics or quantitative market research (MBA preferred) and 2 or more years experience in forecasting in the data terminal industry.

For prompt, confidential consideration, please send your resume to:

Fred Bobka  
Dept. 1617-3-16



**Teletype  
Corporation**

5555 Touhy Avenue  
Skokie, IL 60077

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#### REAL TIME PROGRAMMERS

Qualified applicants should possess at least three years experience in a hands-on environment with mini-computers on Real Time applications. A degree in a technical area is preferred but not mandatory. Data General experience is a plus. Your assignment will be with a small staff developing computer based systems for Walt Disney World, Disneyland, Tokyo Disneyland and Houston People Mover projects.

#### TIME-SHARING ADMINISTRATOR

Responsibilities will be to utilize high level (scientific) language interactive programming on several time-sharing systems. You will assist engineers and designers with coding, design, implementation, and documentation. You will administrate all non-EDP time-sharing requirements including time-share evaluation, vendor approvals, and charges.

Candidates should have 1-3 years related experience in an Architectural, Engineering, or University environment. A BS Degree in either E.E., C.S., math or physics is essential. You should be familiar with various time-sharing vendors' systems, as well as Basic, Fortran, PL1, and other high level languages.

For prompt and confidential consideration call Steve Heise collect at (213) 958-7878, or send resume immediately to:

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Professional calibre individuals interested in a technical and/or management career path.

Use your knowledge and experience working in a product development and a commercial consulting capacity on the newest and largest hardware and software systems.

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Outstanding compensation plan plus complete employee benefit package.

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## Software Engineers

Join the excitement and advance your career at Bendix A&M

We're an active division of a Fortune 100 corporation. When you join us, you'll be in the forefront of an exciting, dramatically growing industry... in which Bendix A&M is a world leader. Our specialty is the design and manufacture of sophisticated, electronically controlled machine tool equipment used for precision gauging and inspection.

The environment at our division headquarters here in Dayton is professional, skilled, and supportive. You'll be highly visible, and have every opportunity to progress to higher levels or to technical management.

- Develop special part inspection programs, including debug and documentation, and work with customers to determine requirements and to solve problems. BS in Computer Science, Mathematics, or Engineering, plus two to four years experience as a high-level language (FORTRAN, BASIC, etc.) programmer of minicomputers. Related experience will be considered in lieu of degree. Assembly language background desirable but not required.

- Assembly language program design and implementation in micro-processor assembly language realtime, process control environment. Zero to two years experience, BS in Computer Science, Mathematics, or Engineering.

To learn more about this outstanding opening and about our excellent salary and benefits package, principals only should send resume and salary history to: Employment Administrator, Bendix A&M Division, 721 Springfield Street, Dayton, Ohio 45401.



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## DATA PROCESSING MANAGER

We are small, well-established company with diversified interests in the hospital industry. We are looking for an experienced individual to head our data processing area. The position requires:

- Knowledge of RPGII and COBOL
- Experience with Burroughs MCP/II and NDL
- Familiarity with Burroughs B1855
- Telecommunications background

We offer an attractive salary and benefits package and the opportunity to live and work in one of the most stimulating areas of the country. If you are seeking the challenge of a small organization, offering the chance to be actively involved in the growth of the company, forward your resume and salary history to:

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## Software Development

Continued corporate growth has created an immediate need for software professionals. Openings exist at all levels, from entry to project management. Development and engineering activities require candidates with backgrounds in one or more of the following areas:

### Systems Software

Operating systems for language driven architecture  
FORTRAN compilers  
Translators and debuggers for Pascal type languages  
Firmware implemented on microprocessor based graphics products  
Pattern recognition and image processing  
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High speed Vector-to-Raster Scan Conversion  
State-of-the-art raster graphics software/firmware systems

### Software Quality Assurance

Test methods and tools for evaluation of software and firmware products. Analyze and test Requirements Analysis, Detail Design, and coding of software and firmware products.

### Computer Architecture

Microprogrammable architecture to support multiple language specific instruction sets.

Tektronix, Inc. develops, manufactures, and markets internationally recognized precision electronic instrumentation. Headquartered near Portland, Oregon, we are within a two-hour drive of the Cascade Mountains and ocean beaches.

Salary is open. Benefits include educational support, insurance, and profit sharing programs.

Send detailed resume and salary history to Susan Sorber, MS 55-033, Tektronix, Inc., P.O. Box 500, F-43, Beaverton, OR 97077, or call toll-free 1-800-547-1164.

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### DATA PROCESSING

#### Director, Systems and Development

DataPhase Systems, Inc., a leader in the field of library automation, is looking for a proven executive to take charge of the top technical position in a technical company. Must have demonstrated experience in organizing, motivating, and controlling fast-track, state-of-the-art development. We are involved in leading-edge applications of database and telecommunications technology. Our growing staff of 15 data processing people (of 32 in the company) will exceed 20 in the next few months. DataPhase Systems has been growing at a compounded rate exceeding 300% the past three years and expects that to continue. We offer a competitive salary and benefits package, and an excellent future. This is an uncommon prospect for the truly exceptional manager. Please reply confidentially to:

Berlin F. Rous, President  
DataPhase Systems, Inc.  
3770 Broadway  
Kansas City, Missouri 64111  
(816) 831-7827  
EOE/M-F

### ACAPULCO VACATION

When P.P.S. places you in your next position, we will send you to Mexico, for one week, all expenses paid. If you refer us a candidate we place, we'll send (2) on the same trip. Our immediate needs are:

- 1) DOS CICS COBOL
- 2) IMS-COBOL Development
- 3) CICS COBOL/Assembler/PL-1
- 4) Internals Software
- 5) Assembler Language Development

These positions are for Dallas, Atlanta, Houston, Phoenix, and San Jose cities. Please send a resume or letter of interest. We will return pertinent information on your geographic preferences.

**Professional Programming Services, Inc.**  
2829 W. Northwest Hwy #207  
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(214) 350-7708

P.S. We have permanent and contract long term consulting positions available for OS, COBOL, and/or data base professionals. If you've ever wondered what (TRUE) consulting is all about, please contact us Top financial remuneration package.

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B.S. Math, Science or Engineering plus minimum 18 months experience in Management Sciences/Operations Research. Familiarity with FORTRAN Programming necessary; strong math background important. Position involves using science technology and mathematics to solve management problems.

Send resume and salary requirements to:

Mrs. Clair Neeley, Coordinator  
Organization Development



**Kerr-McGee Corporation**

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(405) 270-2558

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**SYSTEMS ANALYST/PROGRAMMER V**  
\$1822 - \$2332 per month  
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\$1610 - \$2061 per month

Washington State University is modifying and implementing a Personnel/Payroll/Position control package to run under a total University Information System. The USU uses CICS and the Data Base Management System, ADABAS. WSU operates an Amdahl 470/V6 for a statewide computer network. Two responsible positions are immediately available: Systems Analyst/Programmer V serves as project leader and requires one year of experience as a Systems Analyst/Programmer IV (senior analyst/programmer) or equivalent; or two years experience as a Systems Analyst/Programmer III (independent analyst/programmer) or equivalent. Systems Analyst/Programmer IV serves as team leader and requires one year of experience as a Systems Analyst/Programmer III or equivalent. Apply before March 20, 1980, to the Office of Staff Personnel, 134 French Administration Building, Pullman, WA 99164 or call (509) 335-4521. WSU is an equal opportunity employer.

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# Sr. Research Programmers

We are currently seeking talented, research-oriented professionals to work in the Computer Math section of our Research Department. We are seeking candidates who have a BS or BA degree in one of the sciences with some computer courses and at least 2 years experience with small computers in a scientific application environment. Knowledge of FORTRAN required.

Working in our headquarters in Summit, New Jersey, the person selected will be involved with the designing and writing of programs for basic research. We offer a good starting salary commensurate with background plus a comprehensive program of employee benefits.

If you are interested in working in a highly sophisticated, research environment, please forward your resume with salary history and requirements to: **Mr. C.R. Grupe, The Pharmaceuticals Division of CIBA-GEIGY Corporation, 556 Morris Avenue, Summit, New Jersey 07901.** An equal opportunity employer m/f.

## CIBA-GEIGY

### ASSISTANT DIRECTOR ADMINISTRATIVE SYSTEMS DEVELOPMENT UNIVERSITY OF PITTSBURGH COMPUTER CENTER

The University of Pittsburgh Computer Center currently has an excellent career opportunity for a creative and highly motivated data processing professional who can provide proven leadership in the management and long-range development of administrative systems.

As the ASSISTANT DIRECTOR for ADMINISTRATIVE SYSTEMS DEVELOPMENT, you will enjoy a pleasant and dynamic work environment located in the heart of Pittsburgh's academic community.

Your areas of responsibility will include: directing the efforts of over 20 technical professionals involved in APPLICATIONS SUPPORT SOFTWARE AND APPLICATIONS DEVELOPMENT. You will also maintain close contact with various user departments in order to evaluate and respond to their systems development requirements.

The successful candidate will have:

- An advanced degree (in a related area)
- Exposure to DEC and/or IBM systems
- A strong technical and systems development background
- Demonstrated administrative and management abilities
- Excellent communication skills, oral and written

The salary will be competitive and commensurate with qualifications and will be supplemented by a comprehensive fringe benefits program.

For immediate consideration, send resume to: Ms. H.L. Tindal, University of Pittsburgh, G-26 Cathedral of Learning, Pittsburgh, PA 15260.



The University of Pittsburgh  
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## EDP AUDITING

Major St. Louis based transportation company is seeking 2 persons for expansion of an EDP Auditing function.

### SR. EDP AUDITOR

Candidate should possess 3-5 years professional experience in Accounting or Computer Systems Development to include 2 years of EDP Auditing. B.S. Degree in Accounting or Computer Science is preferred.

### EDP AUDITOR

Candidate should possess knowledge of Computer Systems fundamentals and Accounting principles with 2 to 3 years experience in Auditing. B.S. Degree in Accounting or Computer Science is preferred.

Please send resume along with salary expectation to:

CW Box 2227  
375 Cochituate Rd., Rte. 30  
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### SYSTEMS DESIGNER WITH STATE OF GEORGIA

Ga Dept of Admin Svcs has openings on New Systems Development staff in Atlanta. Systems design for innovative, unique governmental applications utilizing latest concepts and technology in a large state-of-the-art operation (two IBM 3033s and a UNIVAC 1100/82).

Five years of systems analysis and programming experience with systems design and COBOL proficiency required. Salary up to \$25,000 annually (depending on experience). State benefits package includes three weeks vacation, planned salary increases, and tenure/job security.

To apply, send resume to: **Mr. Regis Parsons, Dept of Admin Svcs, info & Computer Svcs, Room 183, Highway Bldg, Atlanta, Ga. 30334.**

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### Data Processing

## Director Data Processing Live & Work in beautiful Central Oregon

You must be well versed in management skills in a Financial Institution (preferably a Savings & Loan). Your past experience must include designing, managing and directing new computer applications. Present system exists on an IBM System/3 model 15D. Must be good communicator and be able to interface with Management and technical support people.

Excellent opportunity with a young, expanding Savings & Loan. Send detailed resume, including salary history to Sandra Narva.

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SAVINGS & LOAN**  
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Individuals only apply

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### Data Processing

## SYSTEMS PROGRAMMERS

Three regular full-time positions with NCAR's computing facility

Needed immediately — one to do software maintenance on the CRAY 1 and one to do software maintenance on a MODCOMP 11 remote job entry system, and one to do software maintenance and development on Terabit memory mass storage system. REQUIRES MS or equivalent in Computer Science, EE or Math, two to four years systems programming on medium-large scale computers OR peripheral and minicomputers respectively and skilled in assembly language programming and FORTRAN. Excellent benefits and salary. Call (303) 494-5151. Marsha Hanson, Ext. 517 or 666.

**NATIONAL CENTER  
FOR  
ATMOSPHERIC  
RESEARCH**  
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Boulder, Colorado 80307

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### Data Processing Business Systems Programmer/ Analyst

Challenging opportunities exist in our Southern California Data Processing Department.

- Background should include planning, scheduling, design, programming, testing and installation
- Exposure to analysis of business systems such as payroll

Qualified pros should send resume with salary history to:

**Bill Kahl  
Department G  
Professional Employment**

**DATA SYSTEMS**  
4000 Westley Avenue  
Van Nuys, CA 91400

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## SENIOR ANALYST PROGRAMMER

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Basic responsibilities will include data preparation, the design and implementation of a file processing system, writing statistical routines and acting as a liaison with various computing services.

Desirable qualifications include a minimum of a bachelors degree in computer sciences, thorough knowledge of the NOS operation system, working knowledge of FORTRAN, COBOL and 2 other higher level programming languages, the ability to design large scale application systems, demonstrated ability to document software for both technical purposes and end users. Salary is negotiable.

For confidential consideration forward your resume or contact:

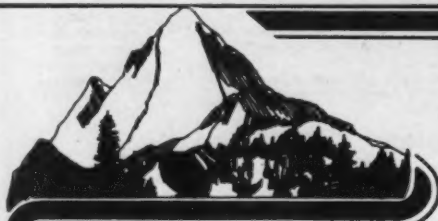
**Don Swarthout  
Professional Recruiter  
Father Flanagan's Boys' Home**  
Boys' Town, Nebraska 68010  
402/498-1034  
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**BOSTON**  
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**ATLANTA**  
**SEATTLE**  
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Come to the majestic mountains of Colorado and take advantage of a unique opportunity, challenging career with one of the foremost electronics companies AND the opportunity to enjoy living in a small community atmosphere.

### PROGRAMMER/ANALYST

BS degree or equivalent, prefer 2-5 years experience in COBOL programming. Experience with manufacturing systems such as MRP or Bill of Materials is extremely desirable. Our technical environment consists of an AMDAHL V6, MVS, ADABAS, COM-PLATE, TSO/SPF, and multiple HP3000.

Hewlett-Packard's Loveland facility is located in the foothills of the Rockies, just a short drive from Denver and close to famous Estes Park. Loveland, Colorado is a community of 30,000 people; a town which offers affordable housing, top rated recreational areas, and excellent academic opportunities.

If you'd like to spend your future with a dynamic, growing electronics company and experience the joys of small town living, send your resume to: **Hewlett-Packard Company, Department 202, P.O. Box 301, Loveland, Colorado 80537.**

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## PROGRAMMER ANALYSTS

Millers Mutual Insurance Association is actively seeking Programmer Analysts to join our progressive data processing staff. Applicants should have prior COBOL and Assembler programming experience with a desire for home office assignments in the forefront of data processing technology working with the most advanced IBM 370 DOS/VS equipment. We offer an excellent starting salary and company paid fringe benefit package.

You may contact Robert E. Saksa,  
Personnel Director at 111 E. 4th  
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## SYSTEM DEVELOPMENT MANAGER OPERATIONS MANAGER

The judicial system of the Commonwealth of Virginia has begun a project to develop comprehensive automation in the courts. Three major systems will operate on a distributed mini computer network. The supreme court requires management staff to supervise project activities.

The **System Development Manager** will act as project manager for software development and hire necessary support staff. The **Operations Manager** will perform the selection of computer hardware and manage data processing operations.

These positions require a minimum of five years experience with progressively responsible activities in the appropriate area. Two years of the required experience must be at a supervisory level. Mini computer expertise is preferred. Demonstrated ability to organize, coordinate, and manage technical and nontechnical staff as well as communication with users are necessary.

For consideration, send resume to:

Dr. Charles L. Aird, Director  
Management Information Systems  
Supreme Court of Virginia  
11 South 12th Street, 5th Floor  
Richmond, Virginia 23219

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Qualified individuals are invited to send their resume to:

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Our Bay Area client has an excellent opportunity for an EDP Project Manager. The successful candidate's background should include:

- Strong leadership skills
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- Knowledge of Banking or Manufacturing Applications and Time Sharing Applications.
- Good working knowledge of COBOL, ALC or FORTRAN.

This position offers an excellent salary and compensation package. We are consultants to management. For immediate and confidential consideration, send resume and salary history to Dan Perkins, Professionals for Computing, Inc., One Maritime Plaza, Suite 1350, San Francisco, CA 94111, (415) 956-7120. Employer assumes fee.

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## NETWORK PLANNER

We need an individual well versed in teleprocessing technology to work on line performance monitoring and problem definition/correction and to help plan our data networks of the future.

### ACTIVITIES INCLUDE:

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Immediate opening for an individual with solid grounding in teleprocessing and with specific experience in troubleshooting, support and performance analysis of Intercomm.

This professional will be the primary Intercomm support for our nationwide TP network handling both our individual and Group insurance business.

A minimum of five years in teleprocessing related assignments is required.

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Karen Poole, Personnel Recruiter



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Send resume to Assistant Director for Programming Services, Computing Resources, University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, Texas 78254.

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Responsible for installation, maintenance and tuning of IMS DB/DC and related software products. Applicants should have a minimum of 5 years Data Processing experience with large IBM Systems and a minimum of one year IMS DB/DC Software experience.

## Data Base Specialist

Responsible for Data Base Design and Performance, Applications Support, and Data Base Backup and Recovery. Applicants should have a minimum of 5 years of Data Processing experience including 2 years of application Development and 1 year Data Base Design.

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(405) 525-4499

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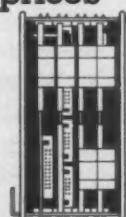
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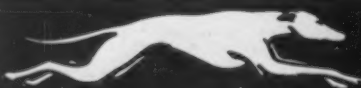
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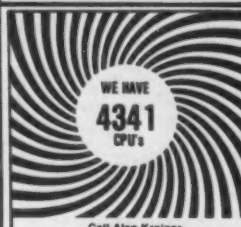


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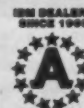
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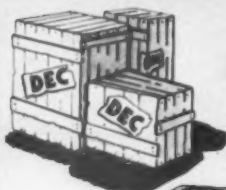
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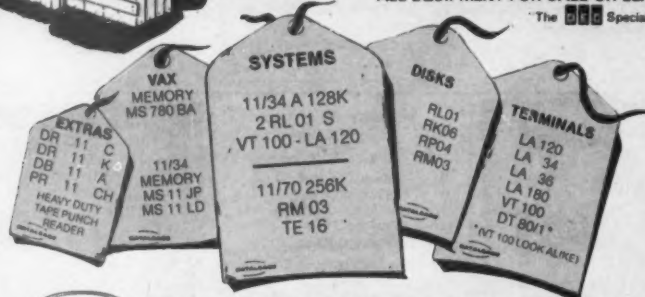
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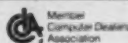
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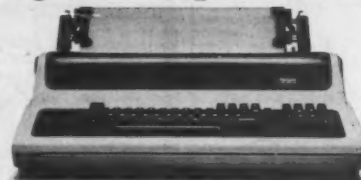
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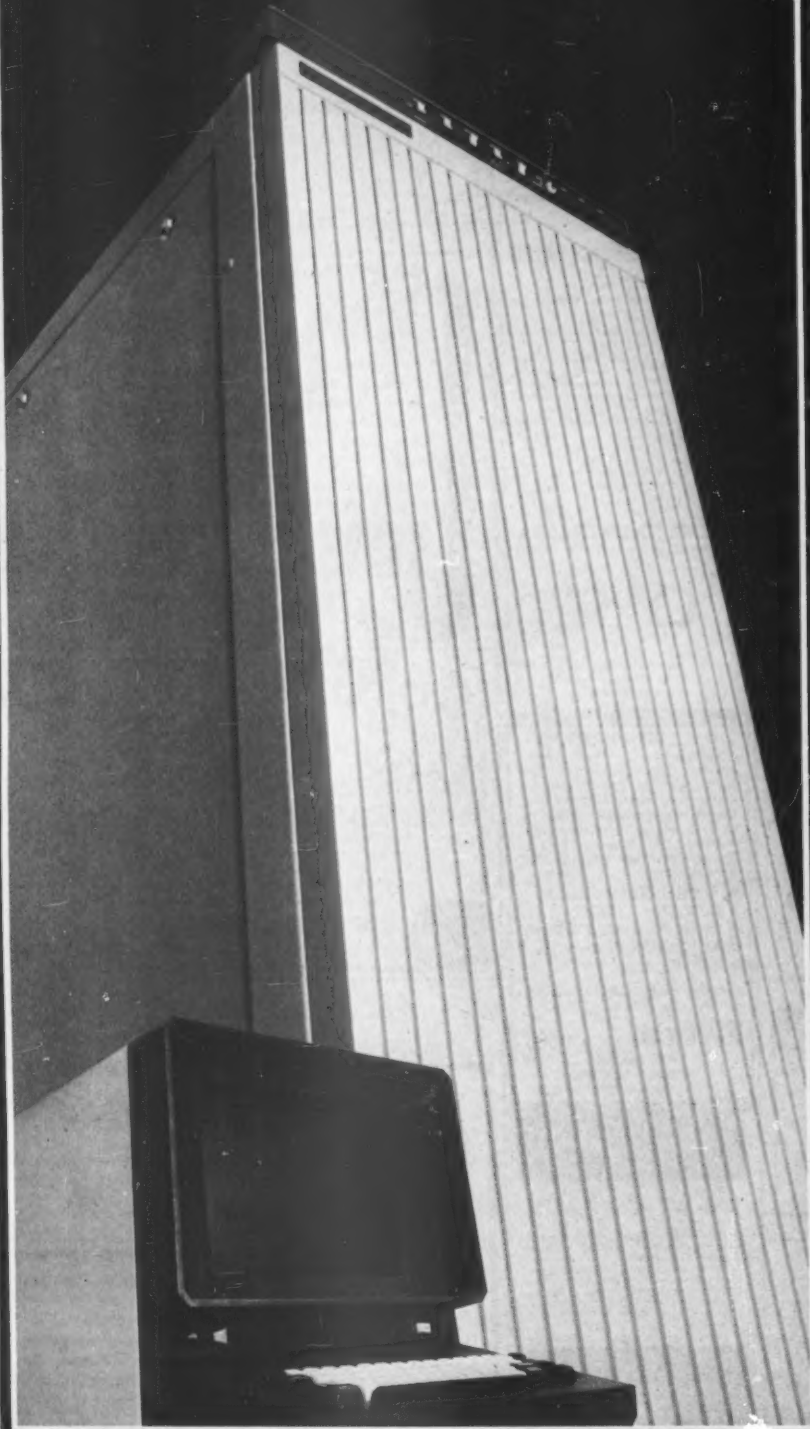
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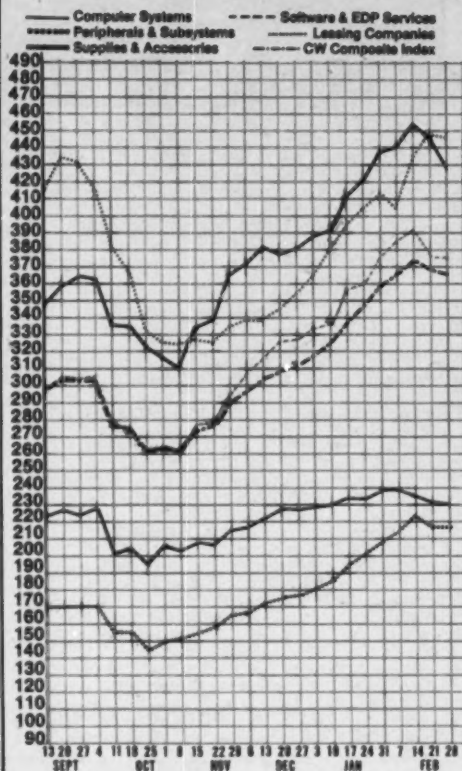
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E X H		PRICE					E X H		PRICE					E X H		PRICE				
		1979-80	CLOSE	WEEK	WEEK				1979-80	CLOSE	WEEK	WEEK				1979-80	CLOSE	WEEK	WEEK	
		RANGE	FEB 27	NET	PCT				RANGE	FEB 27	NET	PCT								
		(1)	1980	CHANGE	CHNGE				(1)	1980	CHANGE	CHNGE								
COMPUTER SYSTEMS																				
A	ANDAMAL CORP	17-69	26 7/8	-2 1/2	-8.5		O	ADVANCED COMP TECH	1-2	1 1/2	+ 1/2	+58.0		A	DATA ACCESS SYSTEMS	9-13	13	+1 1/8	+9.4	
N	BURROUGHS CORP	59-87	73 1/2	-2 7/8	-3.7		O	ANACOMP INC	8-24	17 1/2	-1	-5.4		A	DATA PRODUCTS CORP	13-25	18 3/4	-2 1/8	-10.1	
O	COMPUTER AUTOMATION	9-44	20 3/4	+1 1/4	+6.4		O	ANALYSTS INTL CORP	3-8	5 1/4	-1/8	-3.8		O	DATUM INC	2-6	2 3/4	+ 1/4	+10.0	
N	CONTROL DATA CORP	23-61	53 1/2	-5 3/8	-9.1		A	APPLIED DATA RES.	4-17	15 5/8	-5/8	-5.8		O	DECISION DATA COMPUT	2-6	2 3/4	+ 1/4	+10.0	
O	CRAY RESEARCH INC	8-58	51	-3 1/2	-6.4		N	AUTOMATIC DATA PROC	24-40	34 5/8	-2 1/4	-6.1		O	DELTA DATA SYSTEMS	1-3	2 1/2	+ 1/8	+13.0	
N	DATA GENERAL CORP	42-74	63 3/4	-2 1/4	-3.4		O	COMPU-SERV NETWORK	5-19	18 3/4	-1/2	-2.5		N	DOCUMENTATION INC	6-34	13 1/8	-1/8	-4.5	
N	DATAPoint CORP	34-123	118 3/8	-3 1/8	-2.5		O	COMPUTER HORIZONS	1-9	4	0	0.0		O	DATARAN CORP	6-38	32	-1 1/4	-3.7	
N	DIGITAL EQUIPMENT	39-60	75 1/2	-4	-5.0		O	COMPUTER NETWORK	5-16	9 7/8	-5/8	-6.8		O	ELECTRONIC M & H	1-3	1 1/8	-1/2	-9.3	
N	ELECTRONIC ASSOC.	2-13	10	+ 1/4	+1.5		N	COMPUTER SCIENCES	8-24	21	-1/2	-2.3		O	EVANS & SUTHERLAND	20-50	46 1/2	-2 1/2	-9.1	
A	ELECTRONIC ENGINEER.	9-19	10	+ 1/4	+1.5		N	COMPUTER TASK GROUP	1-8	8 1/4	-1/4	-2.9		O	FABRI-TEX	1-2	1 3/4	-1/8	-8.3	
N	FOUR-PHASE SYSTEMS	10-47	33	-2	-5.7		O	COMPUTER USAGE	2-5	4 1/4	-1/4	-3.5		O	GENERAL COMPUTER SYS	1-3	2 3/8	0	0.0	
N	FOXBORO	28-44	39	-1 1/2	-3.7		O	COMPUT AUTO REP SVC	4-13	5 1/4	-1/8	-4.8		O	GENERAL DATACOM INC	9-24	17 1/4	+ 1/2	+2.9	
O	GENERAL AUTOMATION	7-28	17 5/8	-1 1/4	-8.0		O	CONSHARE	6-26	18 1/4	-1	-5.7		N	HAZELTINE CORP	10-29	24 1/2	-1 1/2	-5.7	
O	GRI COMPUTER CORP	1-3	5/8	0	0.0		O	CULLINANE CORP	14-33	31	-1	-3.1		N	HARRIS CORP	17-39	34 3/4	-2 1/4	-6.0	
N	HEWLETT-PACKARD CO	24-70	65 3/4	-6	-5.7		O	DATA DIMENSIONS INC	1-9	1 5/8	0	0.0		O	INFOMEX INC	1-11	1 1/2	-1/4	-14.2	
N	HONEYWELL INC	43-109	98 5/8	-8 7/8	-8.9		O	DATATAB	1-4	1 1/4	0	0.0		O	INFORMATION INTL INC	7-15	13 1/4	0	0.0	
N	IBM	62-321	62	-5 1/4	-7.8		O	DSI CORP	4-9	7 1/2	-1/4	-3.2		O	INFOTON	1-4	2 5/8	-1/4	-8.6	
N	MANAGEMENT ASSIST	9-29	19 1/4	-1 1/4	-6.0		N	ELECTRONIC DATA SYST	10-28	25 1/2	-3/8	-1.4		O	INTEL CORP	20-75	70 3/4	-1 3/4	-2.6	
O	MANUFACTURING DATA S	9-38	32	+ 1/4	+8.7		O	INFORMATICS INC	9-22	16 1/4	-2 1/2	-13.3		O	INTERFIL	7-32	26 1/2	-2 1/4	-7.8	
O	MINI-COMPUTER SYST	2-8	4 3/8	-1/4	-5.4		O	INSYTE CORP	1-2	1 5/8	0	0.0								
LEASING COMPANIES																				
O	BOOTH FINANCIAL CP	13-21	16 1/2	-1 3/8	-10.0		O	IPS COMPUTER MARKET	3-9	3 1/2	+ 1/4	+7.6		A	LUNDY ELECTRONICS	4-11	9	+ 1/8	+1.4	
O	COMDISCO INC	3-21	12 3/4	-1 1/8	-8.1		O	KEANE ASSOCIATES	3-9	8 1/4	-1/4	-2.9		O	MSI DATA CORP	6-19	9	-1 1/8	-11.1	
A	COMMERCE GROUP CORP	1-1	2 1/4	+ 3/4	+59.0		O	KEYDATA CORP	1-5	3 3/4	-7/8	-18.9		N	NEHREX	10-59	15 1/2	-1 1/4	-7.4	
A	COMPUTER INVSYS GRP	1-7	3	-1/8	-4.0		A	LOGICON	10-23	21 1/8	-9/8	-9.8		N	NONAM DATA SCI	6-20	18 1/4	-1 3/8	-7.0	
O	CONTINENTAL INFO SYS	3-15	3 3/8	-3/8	-19.0		O	NATIONAL DATA CORP	7-19	16 1/2	-3/8	-2.2		O	OMER	2-9	9 1/2	+ 1/2	+5.5	
O	DATRONIC RENTAL	1-6	2 5/8	0	0.0		N	PLANNING RESEARCH	4-19	7 5/8	-1/8	-1.5		O	PARADYNE CORP	9-38	35 7/8	-2 3/8	-7.0	
A	DCL INC	3-6	5 1/4	0	0.0		O	PROGRAMMED TAX SVCS	3-5	4 3/4	+ 1/4	+3.0		A	PERMIL CORP	12-19	17	-1/2	-4.6	
N	DPI INC	7-16	6 5/8	-1/8	-1.8		O	PROGRAMMING & SYS	1-1	7/8	0	0.0		A	POTTER INSTRUMENT	2-2	3 3/4	0	0.0	
N	ITEL	11-26	26	-3/8	-8.0		O	RAPODATA INC	3-7	5 1/4	-1/4	-5.5		O	RANTEX CORP	7-17	16 5/8	+ 3/8	+2.3	
O	LEASCO CORP	24-73	67 1/4	-4 1/4	-6.9		O	REYNOLDS & REYNOLD	12-36	32 1/4	-1/4	-0.8		O	RECOGNITION EQUIP	5-13	8 1/8	-2	-19.7	
O	LEASPCAP CORP	1-4	1/8	0	0.0		O	SCIENTIFIC COMPUTERS	3-10	14 1/2	-1/4	-1.6		O	SAC DATA	1-5	2 3/8	+ 1/2	+3.0	
A	PIERCE TEA CORP	2-7	3 1/2	-1/8	-3.4		N	TYNSHARE INC	10-58	57 1/4	+13 3/4	+32.2		O	SYNEX DATATECHNICS	4-31	39 3/4	+1 1/2	+12.0	
N	U.S. LEASING	12-20	13	-1 1/8	-7.9		A	US SYSTEMS	5-12	11 7/8	+3/8	+3.2		O	T BAR INC	11-28	26 3/4	-1 1/2	-5.3	
PERIPHERALS & SUBSYSTEMS																				
N	AM INTERNATIONAL	13-22	17 1/4	+ 1/8	+0.7		N	WVLY CORP	1-9	7 3/4	+ 1/2	+6.8		O	TEC INC	5-13	5 1/4	-1/4	-12.5	
N	AMPER CORP	18-29	27 7/8	-3/8	-1.3									N	TEKTRONIX INC	33-64	54 3/8	-7 1/4	-11.7	
A	ANDERSON JACOBSON	5-16	14 3/8	0	0.0									O	TELEX	3-9	4	-1/4	-8.0	
N	APPLIED DIG DATA SYS	6-22	7 7/8	-3/4	-9.0									O	TESDATA SYSTEMS CP	8-26	12 5/8	-7/8	-5.8	
O	AUTO-TRAIL TECHNOLOGY	14-39	34	-2	-5.9									O	TIMEPLEX INC	4-14	13	-3/4	-8.4	
O	BECHTEL INC	3-8	7 5/8	0	0.0									O	WILTEX INC	1-2	1 1/4	+ 1/8	+23.3	
A	BOLT-BERANEK & NEV	6-22	20 3/8	-3/4	-3.5															
N	BURKE-RAND	10-32	26 1/2	-1 1/8	-4.0															
O	CAMBRIDGE MEMORIES	1-9	2 3/8	-1/8	-5.8															
O	COMPUTER DEVICES INC	5-9	7 3/4	-3/8	-4.6															
N	CENTRONICS DATA CORP	10-54	38 1/2	-1 3/4	-4.3															
O	CONTRONICS	6-10	5 3/8	-1/8	-4.5															
O	COMPUTER COMMUN.	4-27	26 1/2	+1 1/4	+4.9															
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A	COMPUTER EQUIPMENT	1-5	8	0	0.0															
O	COMPUTER TRANSCIVER	1-5	8	0	0.0															
O	COMPUTERVISION CORP	5-50	53 1/4	-1 1/2	-2.7															
N	CONRAC CORP	13-26	22 1/2	-1 1/2	-6.1															

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